THE GAS INDUSTRY

News Letter

...published in the interest of successful gas operations

UNIV. OF MICHIGAN

ISSUED BY GAS MAGAZINE...for men in management in the Gas Industry

MAY 27 1953

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Billions of dollars for better gas service. Gas utilities and pipe line companies throughout the United States are budgeting near-record appropriations for 1953 construction. One hundred twenty-five distributing companies have set aside half a billion dollars for the purpose. Pipe line companies are already in the middle of $327 million construction, have their orders in for FPC certificates aggregating another $2.1 billion. (An exclusive GAS survey of each of these industry divisions starts on pages 36 and 101, respectively, May issue of GAS.)

Planning on converting to natural gas? Then beware of safety letdowns. With the carbon monoxide menace taken away, street department employees may feel too safe once they begin working with natural gas. A redoubling of efforts is needed to prevent a general relaxing of safe work precautions. (Page 32, GAS for May.)

More money for less work. That's another problem that must be faced after conversion, according to William Fraser of Detroit. (He tells why on page 35, May GAS.)

The market for vented recessed wall heaters is growing, so the AGA has revised its testing procedures to assure a completely safe and satisfactory product. (May GAS, page 50.)

At what load point should a system convert to higher pressures? When space heating saturation exceeds 60%, Fred Bunnell of Jackson, Mich., advises a step-up to pounds pressure. (May GAS, page 33.)

How to win friends: admit you're wrong! After the 1951 Brighton tragedy, Rochester Gas & Electric Company immediately accepted complete liability, rehabilitated the homeless, made loans pending settlement of claims. Result: no damage suits, reawakening of public faith in the company. (For a complete report on how the utility handled its obligations, see page 43, May GAS.)

The "common carrier" obligation has now been defined. El Paso Natural Gas Company has finally won a victory over ex-Secretary of the Interior Oscar Chapman, who had some pretty extreme notions about the obligations that a permit to cross public lands carries with it. (Page 148, May GAS.)

Oil imports give the gas industry cause for concern. Although the domestic oil industry has been carrying the entire fight against what it terms "excessive" imports of oil, the gas industry has a stake in the controversy as well. Some casinghead gas has already been taken off the market; even more of a threat is a possible slowdown in oil exploration, which means fewer gas finds in the future. (May GAS, page 58.)

Who should pay for abandoned gas plants? The customer should at least share in the loss, since conversion to natural gas has resulted in a lowering of rates. This proposition was a matter of controversy in a recent Wisconsin rate case. (GAS, May, page 52.)

And the cost-of-money question has also arisen. If money costs less for a parent company to obtain, should rates be predicated on such costs instead of on the costs to the operating company involved? The Wisconsin commission has had to mull this one over, too. (Page 54, May GAS.)

West Coast leads the field in race for Northwest pipe line. A recent decision of the Canadian government plus the outright support of Portland Gas & Coke Company is tipping the scales in favor of the line that would tap Peace River fields in western Alberta to serve the Pacific Northwest. (GAS, May, page 150.)

Pipeliners will continue to have their own exclusive section in GAS - just as they've had since 1949; but the name is being broadened from "Pipeline News and Features" to "Gas Transmission and Conditioning," effective with the May issue. The new name better defines the broad editorial treatment this section gives each month to the operations of the transmission division of the gas industry. (Page 99, May GAS.)

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SPOT NEWS AND COMMENT ON GAS INDUSTRY AFFAIRS

Highlighting the News

Balm for Algonquin's wounds: it can sue

The federal district court for New Jersey has held that the pipeline company can bring suit in federal court to prevent local authorities from interfering with its operations, even though a court of appeals has set aside its FPC certificate. Furthermore, should FPC refuse to reinstate the certificate (for the pipeline to serve New England), disposition of facilities is still a matter for FPC to decide.

$50,000 anti-gas weapon

Worried oil heating equipment manufacturers and distributors, and fuel dealers are joining forces to battle gas househeating. Principal weapon is an advertising kit which cost $50,000 to produce and contains fresh selling and advertising ideas for use by the marketer. This may be a forerunner to a national ad campaign.

Competitive bidding for stocks

Liberalized SEC policy on public utilities holding company stock offerings is seen in two cases recently under consideration by the agency, in which it was recommended that sales be made direct to underwriters instead of to present common holders under preemptive rights. American Gas & Electric and Columbia were the companies involved. Columbia, for one, felt it would be a break for present holders.

Nominations now open

Entries in the competition for the AGA distribution achievement award, sponsored by American Meter Co., must be in by May 31. Copies of rules and nomination blanks may be obtained from Stanford Setchell, AGA operating section secretary, at headquarters in New York.

Utility saved from "ruin"

A federal court in Oklahoma City has issued a permanent injunction against the state's corporation commission, permitting Consolidated Gas Utilities Corp. to keep a new rate schedule in effect until May 6. The commission had granted a new rate in January, but yielded to pressure from 45 cities served by the company and on March 27 rescinded the order, setting the matter for full hearing April 29. Consol attorneys warned the court that without the boost, the company would face "financial ruin."

Oklahoma studies severance tax

The state's greatest advantage in attracting new industry would be wiped out, legislators proposing a new natural gas severance tax were warned last month. With about 70% of its gas utilized within the boundaries of the state, Oklahomans themselves would be hit hardest, said Oklahoma Natural Gas Co.'s Joseph Bowes.

Price fix clears hurdle

The Hazlewood bill to fix a price floor under Texas gas at the wellhead squeezed past committee hearings by a 7-6 margin, went to the state senate late in April.

Canada's house okays line

At Ottawa, the dominion house of commons has certificated Mid-Continent Pipe Line Ltd.'s proposal for an Alberta-to-Ontario-Quebec gas line, to serve 285 MMcf per day to large cities in the eastern provinces as well as several points in Manitoba and Saskatchewan, en route. The pipeline would be along the all-Canada route, with no service to the north central U. S. as originally intended.

Trade 'n' save

That's the new slogan for next fall's Old Stove Round-Up, with the accent off the western flavor. AGA is urging member companies to join up now.

An Eye on the Capital

Compromise on Kuykendall

By the time you read this, it is likely that Thomas C. Buchanan, an important appendage of the Truman administration, has departed the Federal Power Commission, among the usual plaudits and kudos reserved for those who are going to join the politically deceased. He has been replaced by Jerome Kuykendall, chairman of the public service commission of the state of Washington, who has gained respect throughout the Far West for his fairness and capability in utility matters.

It is felt here that, in choosing Mr. Kuykendall, the President acted to get off the hook with either Sen. Frank Carlson (R.-Kan.) or Gov. Thomas E. Dewey, of New York, both of whom were feuding over men of their own they wanted on the FPC.

Also, the President appeared to be following a pattern he had set when he named recently another state utilities chairman to the Federal Communications Commission. The Eisenhower team tends to look for men who have served capably in state jobs, and in a non-controversial manner. Under President Truman, the tendency was to promote men with a "federal" background, but the new President seems to prefer

Thermally Thinking

men with strong roots in state or city life, for regulatory posts.

Mr. Kuykendall's confirmation—in time, if not immediately—was viewed as a foregone conclusion by observers here. It is possible, if not probable, that he has taken office by this time, thus relieving of his interim post the former chairman, Mr. Buchanan, who was refused confirmation by the Senate Committee on Interstate and Foreign Commerce last year and has been serving only until a successor was named.

It is believed that Mr. Buchanan, a lawyer before he went on the FPC, will return to the legal field.

Bills, bills, bills

Congress is hearing more about the natural gas industry this spring than it has in any similar period in a long time. That's because (1) the House Committee on Interstate and Foreign Commerce has come to life under Rep. Charles A. Wolverton (R.-N. J.) and (2) other Congressmen are introducing bills affecting the industry.

Rep. Frank T. Bow (R.-O.), who is well known to the natural gas industry because of his awareness of the evils of federal domination, has testified before the House group in favor of his legislation, H. R. 2679, to exempt from FPC jurisdiction companies receiving natural gas from outside a state for consumption within the state, providing the companies do not make any sales for resale or engage in any transportation for hire.

He said that the cost of natural gas to the consumer actually is higher because of "unnecessary" federal regulation of local utilities. The purpose of his bill is to "redefine the jurisdiction" of the FPC, he said, adding that its enactment would eliminate the needless expense to natural gas users caused by accounting and legal costs brought about by the present duplication of regulation.

The Natural Gas Act, under present court interpretations, requires the FPC to regulate local gas distribution companies, wherever they operate high-pressure connecting lines, to bring gas from the interstate pipelines to local distribution areas.

A bill that goes far beyond Mr. Bow's legislation has been introduced by Rep. Carl Hinshaw (R.-Calif.), who is the second ranking member of the House Committee on Interstate and Foreign Commerce, and, as such, a very powerful figure in the Congress. This is H. R. 3769.

The Hinshaw Bill would exempt companies receiving gas from outside the state for consumption within the state, including companies making sales for resale, or engaging in transportation for hire. The Hinshaw Bill provides, however, that such companies cannot obtain exemption from federal regulation unless they are subject to state or local regulation, a provision that wouldn't mean much except in one or two states that have no public utilities commissions.

The National Assn. of Railroad and Utilities Commissioners, whose executive secretary here is John Randolph, has recommended enactment of legislation virtually the same as the Bow Bill. This group now is studying the Hinshaw Bill, which was introduced rather unexpectedly from the standpoint of the industry as a whole. A special report to the NARUC's executive committee will be made on the Hinshaw Bill on June 26, in a meeting in Chicago. The California commission has urged the Congress to enact the Hinshaw Bill, which would seem to have a good chance of taking the place of the Bow Bill, unless unexpected gimmicks show up through the various studies being made.

Sen. Lester Hunt (D.-Wyo.) has introduced S. 1287 to amend the Natural Gas Act, Section 3, so as to provide for Federal Power Commission approval or disapproval of importation or exporting of natural gas. Under terms of the legislation, disapproval of importation or exporting of gas would be indicated if FPC found that such action would "result in economic dislocation, unemployment, or injury to competing fuel industries." The measure apparently is the result of the controversy, now going on in hearings before the FPC, over whether to use Canadian gas for the growing Northwest, or to pipe it from the Southwest, U. S. A.

Rep. Percy J. Priest (D.-Tenn.) has introduced H. R. 3707, to prevent FPC from regulating distribution of gas from the point it leaves facilities for transportation in interstate commerce, although the same company may have handled the interstate transportation. An identical bill, H. R. 3892, has been introduced by Rep. Oren Harris (D.-Ark.), although neither of these bills likely is to be adopted, since they are strikingly similar to the Hinshaw Bill. Since Mr. Hinshaw is so prominent in the majority side of the House Committee on Interstate and Foreign Commerce, it seems likely that his legislation, amended by the committee, would be the bill to watch, if any legislation is reported out, and it seems likely that one or the other of these bills will be.

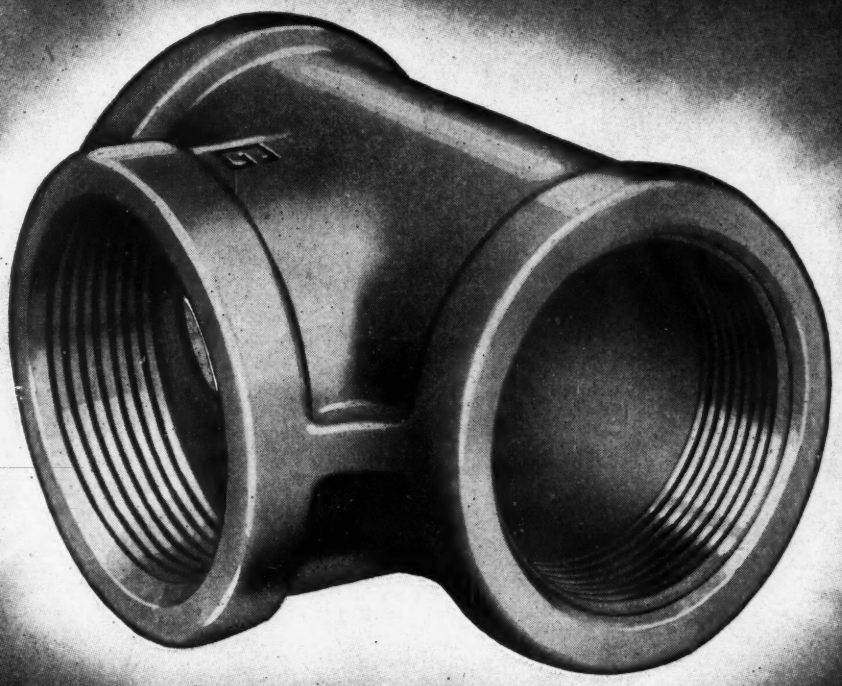
Whether the bill that the House of Representatives would pass would have much chance in the Senate Committee on Interstate and Foreign Commerce is a horse of a different color. A lot depends, over there, on the attitude of Sen. Charles W. Tobey (R.-N. H.), who likes to take the "liberal," or collectivist, attitude.

Reconversion to coal?

By the time this is in print, the Kent anti-storage bill in the Pennsylvania legislature may have died in committee—certainly things had quieted down considerably in the latter part of April. However, should it go through as proposed, the bill would without a doubt cause the gas industry in the state considerably more harm than the coal interests say it would.

If it hadn't stirred up the hornet's nest—no doubt, quite unexpectedly, insofar as the administration is concerned—it would be presumed to stand an excellent chance of barreling right through, since its author, Rep. Robert Kent of Meadville, is Republican whip and therefore must have had the back-

Continued on page 66



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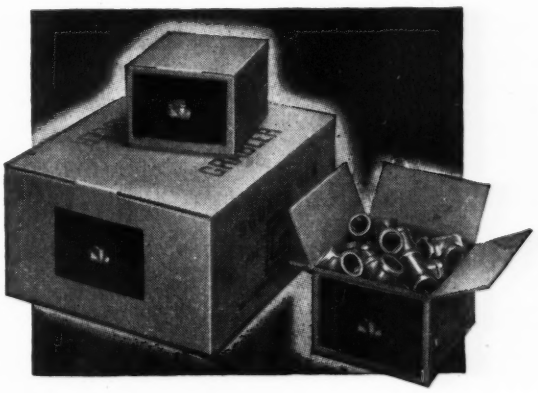

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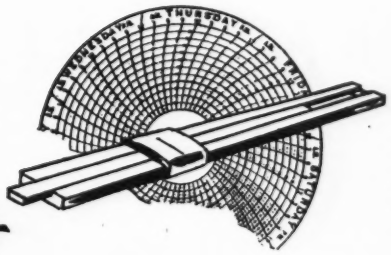

• By GUY CORFIELD

Oil industry forecast for 1953

According to oil industry journals, there are plans for 1953 which will surpass the records of last year. Capital expenditures will be $4009 million, of which more than half will be for drilling and producing. Wells totaling 46,230 will be drilled for a total of 190,285,000 ft of hole of which the average depth will be a little over 4000 ft and the deepest probably beyond 15,000 ft. Of these new wells, 35,115 will be in existing fields and 11,115 will be "wildcats," and according to past records about 17% of the wildcats will discover new oil and 3% will discover new gas.

Domestic demand will be 7,647,900 bbls daily, 5% above 1952 which was, in turn, 3.6% above 1951. Refinery runs will average 6,863,000 bbls daily. There will be 11 new refineries built, and 10 major additions to existing refineries. Many oil companies, large and small, will either expand existing petrochemical production or initiate such production, either directly or by forming chemical subsidiaries.

Atomic Power and Private Enterprise

An enormous amount of information for anyone interested in any phase of "Atomic Power and Private Enterprise" is contained in a newly published 415-page pamphlet with that title, prepared for the use of the Joint Committee on Atomic Energy.

It is possible, in the scope of this page, to quote only a few paragraphs and section headings as follows:

"Today the U. S. has in operation or under construction more than 20 large and small atomic reactors.

"Atomic power will propel an American submarine by 1954 and possibly an American aircraft carrier by 1957.

"A major effort is being made to build an atomic powered military airplane.

"There is today no question that atomic power for industrial purposes is technically feasible, if cost were to be disregarded.

"A single reactor can be designed to produce both plutonium and power: hence the price of power might be reduced by selling it as a co-product with plutonium."

On the subject of "Which Path to Atomic Power?":

"The Monsanto-Union Electric Approach: Government would build a pilot plant producing power and plutonium, whereupon private industry might build at its own expense the full-scale plant.

"The Dow-Detroit Edison approach: private companies would continue study and research, partly at their own expense, whereupon they would themselves finance and build a full-scale power-plutonium plant without going through the pilot plant stage.

"The Commonwealth Edison approach: government would build a reactor producing power and plutonium while private utilities build, at their own expense, generating equipment to convert the power to electricity for sale to the public.

"The George Weil proposal: the former AEC Assistant Director of Reactor Development has suggested that a non-profit foundation be established by private groups, for the purpose of building a pilot plant to produce power only.

"The 'Power Package' approach: government might build a small-scale system in an area where present power costs are high and itself sell electricity from such a system to private consumers.

"The Eureka proposal: Nevada mining and ranching interests have asked that the AEC locate a power-plutonium reactor near Eureka, Nev., with the power to be used to pump water from local mines and also to assist desert irrigation.

"The 'All-Government' approach: the AEC might build the first plant and generate electricity for its own use within the Atomic Program."

"Atomic Power and Private Enterprise" may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Price: $1.

Oil reserves

It is claimed that the world's largest oil reserve consists of the enormous deposits of bituminous "tar" sands in Canada, located approximately 300 miles north of Edmonton, Alberta, or about 600 miles north of the U. S.-Canadian boundary. Estimates give the area overlaid by these oil sands as between 10,000 and 30,000 square miles, containing between 100 and 250 billion bbl of oil.

These sands contain from 10 to 20% of bitumen which, when retorted, yields 80% by volume of a fluid oil similar to petroleum from oil wells. Four methods of raw sand treatment have been explored by the National Research Council of Canada: solvent extraction, hot and cold water washing, and retorting. A report by the Alberta Provincial Government estimates that a .26% sulfur, 26 API gravity oil could be produced and laid down at Superior, Wisconsin, at a cost of $3.10 per barrel.

It is stated that the extraction process is easier and more economical than that required to obtain oil from oil shale or coal, and that the product can be handled and refined by similar methods to those now used for petroleum; and that therefore, when and if normal petroleum supplies decline to the point that synthetic fuels must be seriously considered, these Alberta oil sands will receive preferred attention.

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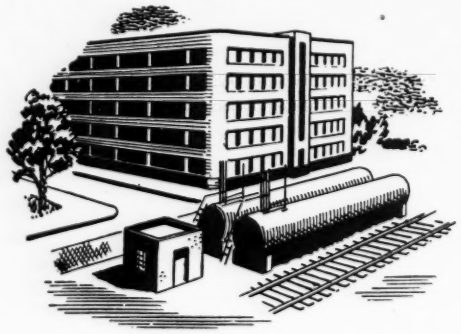

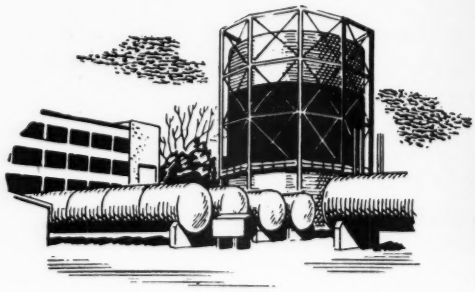

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GAS exclusive

NEGA panel recounts conversion experiences

Panelists were T. C. Moran, Niagara Mohawk Power Corp., Syracuse, N. Y.; David W. Price, Conn. Light & Power, Berlin; W. R. Fraser, Michigan Consolidated, Detroit; J. H. Wolfe, Consolidated Gas, Baltimore; A. W. Johnston, Boston Consolidated (moderator); H. C. Jones, NEES, Malden, Mass.; C. A. Brown, Rochester Gas; F. H. Faulstich, Springfield (Mass.) Gas Light; F. H. Bunnell, Consumers Power, Jackson, Mich.

Outstanding event of the New England Gas Assn. annual business conference March 26-7 was this round table on the subject, "Operating Experiences With Natural Gas." In this presentation, the editors of GAS have transcribed the remarks of the panelists and edited and abridged the discussions in order to bring out the essence of each speaker's thoughts.

Q. *What has been your experience, since conversion, with leak clamping?*

FRED H. BUNNELL:

In our clamping program, we "Carboseal" 3- and 4-in. mains, except ahead of paving programs. We prefer to clamp all sizes of joints there; otherwise, we are instituting a routine program of clamping only joints of 8-in. size and larger.

We have made one modification, on the basis of the economics of the situation. At the present time, in clamping ahead of paving, we only install clamps if the test prior to the paving indicates that a leak exists. In other words, we would normally Carboseal those joints ahead of the paving program, and take our chance of not having to take up the paving the following year or at least in the immediate future to repair those not leaking at the time of the test.

The cost of an average 12-in. clamp is about $72 per joint under pavement, based on contract work and including the restoration of pavement. The majority of our clamping was done by contractors with company inspectors.

There will be considerable variations in price; on a dirt street, 6-in. clamps averaged $24; 8-in. clamps, $27, and 12-in. clamps, $30. Where paving existed, the 12-in. cost $72, the 6-in. cost $57, and 8-in. approximately $59.

The method of testing the clamp has caused a great deal of concern, and it is a rather provocative question. Some people in our area have actually made the joint leak before they put the clamp on, so that they could test, knowing a leak existed. We weren't quite satisfied with that test. It may leak in one or two or three places. One might get an effective

pressure point, where a leak was created, but a good gasket pressure might not be obtained at points not leaking, and the clamp wouldn't do any good so far as leaks developing in the future are concerned.

We went back to the pressure method, and we are quite satisfied that it is the most dependable. This means of testing consists of inserting a trowel point, knife blade, or feeler between gasket and bell face and between gasket and spigot end of pipe at intervals around the circumference. If the gasket pressure is proper, the blade will be rejected by the resistance of the rubber contact to metal. If the blade can be inserted and is not rejected, the joint is not satisfactory.

Another point to be considered is that, in our area, we had all cement joints. With lead joints, it is possible to avail oneself of the 1-ft opening, and clean and install clamps successfully, whereas on the cement joints this cannot be done. It is important that the joint be carefully re-faced before the clamp is installed; this can be done with special tools in a small opening. Cement is likely to spall off in the process and cannot be patched in the small opening. Usually plaster of paris and neat cement are used for refacing the joint.

Where we can get into the hole, we have made a hole with a 20-in. auger and cleaned the joints, and put the clamp on. This cuts down the amount of excavation and expensive concrete replacement.

WILLIAM FRASER:

In Detroit, the main distribution lines which had normally been operated at approximately 10 lbs out of the so-called city gate distribution center were all clamped and reconditioned to handle 50 lbs to the nearest location, where a second cut could be taken into the intermediate distribution system, which remained at between 5 and 10 lbs.

Q. *What course have you followed in combating dust problems?*

MR. FRASER:

We started a fogging and humidification program in Detroit. Dust has not proved a chronic problem. Initially, all the gas entering the distribution system was oil fogged and humidified at a central point. Recently, the pressures in the lines leaving that central point have been increased as high as 75 lbs, and, with very little calculation, it can readily be determined that when gas over 30 lbs or 35 lbs is humidified, and then allowed to drop in pressure and go to the customer at inches of water pressure, the relative humidity will be very low.

Therefore, a decision has been made in our area to discontinue humidification whenever gas is distributed at a pressure higher than 30 lbs.

In the past year or two no gas has been distributed from the central station at less than 30 lbs; therefore, humidification in the Detroit area has, to all intents and purposes, been discontinued.

After the two-year period with dry gas, no detrimental effects have been noted.

DAVID PRICE:

In our company, we believe that the remedial measures adopted and the corrective steps taken to solve natural gas problems are largely selective. We do not believe that any one location or any one community presents the same problems in every case.

We planned to apply wetting agents to all areas that have received natural gas, and will receive it in the future, where gas is distributed through a low pressure system.

The gas previously served had been a wet carbureted water gas carrying water and oil in suspension.

We proceeded to mitigate the leakage and the dust trouble, therefore, by wholesale across-the-board application of a wetting agent to three communities. The first community has been completed and is now receiving natural gas.

The first community I mentioned comprised 22 miles of low pressure mains, with a mixture of steel and cast iron, or 29 miles of pipe on a 3-in. equivalent basis. We used the pour-in method; 120 pour-in stations were installed at the main with a connection running to the curb and the curb box placed at that point.

The average cost per station in this particular case amounted to $79.

The application of Carboseal was generally proportional to the size or diameter of the main; in other words, we had from four to nine treatments, depending upon the size of the line and the main being treated. The total overall cost was $535 per mile of 3-in. equivalent main. We had no trouble in doing the job. The presence of the wetting agent has been definitely ascertained by samples of pipe that have been dug up and examined. The inside of the pipe is coated and wet.

In the other two communities, the cost per input station varied from $46 per station in the first one, to $70 per station in the second community. The cost difference lies in the type and kind of paving encountered and the attitude of the town fathers toward the paving repairs.

We decided to oil fog in every location, well in advance of the arrival of natural gas, or the arrival of a dry gas, which will be the case in certain of our areas where we are now doing some reforming and plan to do some more in larger areas when the natural gas in received.

We have definite evidence that the fog is reaching into the system. We feel sure that it is effective and advantageous in coating the inside of the mains. We are doubtful that it has a beneficial effect on meter performance.

We have not been able to prove that it softens the diaphragm or extends the accuracy of the meter.

Q. *Have you had any dust "flurries" in your system?*

CALVIN A. BROWN:

We had a peculiar experience in Rochester in that we did have a dust flurry. In purging one of our natural gas feeder lines to supply a new territory with natural gas, we reversed the flow and purged a big 12-in. line with manufactured gas, at not too high pressure—about 10 lbs. Then we reversed the flow again and brought the natural gas in.

However, in reversing the flow we filled up that line with a lot of deposits from our manufactured gas system. As a result, out of some 1750 low pressure customers converted to natural gas, we had as high as 134 complaints in a day, mainly because of pilot outages.

As we had gone through the low pressure system and used wetting agents we knew it wasn't the dust in the low pressure system that was responsible; it was the dust fed back from the high pressure

system and carried by the natural gas.

We finally licked the problem by installing a filter to the district regulator, and the condition was immediately cleared up. We had such good results there that we are now making it a practice to install filters before every low pressure district regulator. This procedure has been highly successful.

In converting to natural gas, we found no ill effects of reversal of flow in the low pressure mains and very little effect in the medium pressure mains, so long as we were careful to purge slowly and keep from stirring up dust.

MR. PRICE:

Our experiences have been rather limited, because our natural gas conversion program is far from complete. However, wherever we have completed the wetting agent application and have oil fogged well in advance of the natural gas, we have not had any dust, gum or naphthalene troubles.

MR. FRASER:

In our city system, a new pipeline discharged a deluge of dirt and dust into a restricted area. To combat this, a pressure fog pot was set up and a light oil was discharged into the gas to settle the dust. The oil did an excellent job.

However, about six or eight months later, in the area which contained a number of house regulators, there was a deluge of complaints of sticking regulator valves which had to be cleaned or renewed.

The majority of the oil used for fogging was a crude kerosene which had gum-forming tendencies. Care must be exercised whenever a fogging oil is used to make certain that it will not form gum or that it contains some form of gum inhibitor.

Q. *What effects have fogging or humidification had on service stoppages?*

HERBERT C. JONES:

We have not had any dust troubles on our low pressure system. We do not humidify as such, but we do put the natural gas through our wet holders for low pressure distribution except in two locations where we bypass the holder. In these two locations we haven't had enough experience to know the results.

On the high pressure system, at five of our 11 properties on natural gas, we had to reverse the flow through a high pressure main. We have had an inkling of stoppages in each case, but by an increase in the oil fogging rate the dust trouble was stopped immediately and it has not recurred.

We think that the oil fogging is the answer and, if carried on religiously, will take care of dust problems satisfactorily.

Q. *How has conversion affected operating, sizing, and maintenance practices on district regulators?*

MR. BUNNELL:

The importance of these district regulators is shown by the fact that when a company gets into natural gas with its greatly increased loads, pressures will be going up by leaps and bounds. For example, the company might jump from 12 to 43 billion almost overnight, and obviously, since it won't have time to rebuild to handle the load, it must raise the pressure. The company starts in with the system it has and makes it do.

Inspection programs for regulators should be stepped up materially. Where we used to make a casual inspection, the inspection now is carefully scheduled on a weekly-to-monthly basis, depending on load, pressures, location, and possibility of dust storms in the pipeline causing abrasive wear on regulator stems.

Our main supply stations are equipped with heaters, cleaners and dual regulators and the systems which they feed into (which we call loop lines) around the metropolitan areas, feed back into the low pressure system, again with dual regulators. Low pressure systems are fed directly off the loop lines, single stage, up to 40 lbs.

We are eliminating vaults as much as possible.

We originally had non-sealed regulators, but they have largely been converted to seal-type.

Services operating at 40 lbs or over are two-staged, which is accomplished by setting an additional regulator at the property line, and cutting the pressure down to 10 lbs before entering the customer's house.

On all services serving schools, theaters, churches, and public buildings, we have an automatic shutoff ahead of the meters which will shut off in case of over-pressure or excessive temperature due to fire.

THEODORE MORAN:

Having had several major conversions in natural gas in Niagara Mohawk's system, we have found that the immediate change that has to be made in district regulators is relatively small.

Most modern types have changeable valves in them, which can be adjusted, so that if one is confronted by reduction out of a station immediately after changeover, a rapid rise in the load occurs so we are back to the same volume very soon.

If oil fogging is used on intermediate pressure lines, a quantity of fog can be accumulated right in the station regulator and quite a lot of it knocked down right there.

On the subject of the dust catchers, we suspected that it would be a pretty sound policy to put a city gate dust remover at all delivery points. The first installations were of the oil contact type. Since then, we have installed several of the newer dry type removers.

One word of caution on the dry type cleaners: A company might go along day after day and only take out a pound or a half pound of dust, but some day there will be a reversal of flow and large quantities will come through and fill the boot right up. We have had that experience a couple of times.

The oil type cleaner apparently has enough additional reservoir capacity to absorb quite a slug that would go through the dry-type separator.

Where we oil-fog, and have been able to get a reasonably thorough job, the migration of dust to district regulator stations seems to be a minor occurrence, and for that reason we haven't found it necessary to put dust traps at each regulator station.

Where oil fogging is a little bit slow in making itself felt far out, we have found that the portable atomizing type, self-powered spray device will do a pretty good job of wetting down a difficult stretch of main to prevent the movement of dust from that particular

stretch into the regulating station. Otherwise, it might be found necessary to have a dust trap at that station.

Q. *Have you found that street department employees are inclined to become lax about observing safety precautions since they are now working with a nontoxic gas?*

MR. MORAN:

Street men and others do show a tendency to let down in their regard for the hazards of unburned gas.

A practical reason for this may be the fact that carbon monoxide gives a man a headache; even though he may not have been in any serious difficulty, he had had that unpleasant experience which served as a reminder that if he took even a little bit of it, he paid for it with a bad headache.

With natural gas he doesn't have such an effective reminder to keep him on guard. Then, too, the masks and breathers are, at best, cumbersome and somewhat uncomfortable, and the inclination is to become lax in using them.

Another difficulty is that a company probably will find itself with twice as many men in the distribution department as it had a few years previously, and, while the old-timers had a background of experience that some of them obtained the hard way, the new men have to be taught. One of the things that needs emphasis in any training program is the fact that, although they may not become asphyxiated with natural gas, when it is ignited even in small quantities, they may get terrific face or lung burns.

Regard for safety of operations has pointed up the necessity of always having somebody at the top of the manhole in case gas is present.

MR. BROWN:

I say amen: Do not relax safety precautions when you convert to natural gas.

In Rochester, we have 100,000 customers on manufactured gas, and about 33,000 on natural gas. Those territories are bordering one another all the way around the city, with natural gas on the outside and the manufactured gas on the inside, so when our men go out, they do not always know what gas they are going to strike when they are on a street. As a consequence, we don't have quite as much trouble making them use the precautions on natural gas.

However, we find that in our safety meetings and in every other meeting that we have, we must continually stress that the same safety requirements must be used with natural gas as with manufactured gas. We tell them to use a mask whenever they are working in the gas, and take all the precautions that are necessary.

Q. *What experiences have you encountered in converting a low pressure system to intermediate pressures?*

MR. FRASER:

There is one major reason—and probably it is the best reason—for converting an inch pressure system to a 1- or 2-lb system; that is, the pressure drop in an inch pressure system during the period of high demand between the entrance and the low pressure point of the system is sufficiently large to cause poor customer service.

In converting to a pound system, each customer's service must be equipped with a regulator. The regulator assures an even pressure in the customer's service piping, regardless of the pressure maintained in the main system.

Therefore, relatively wide main pressure fluctuations may exist and still provide the pressure differentials required to obtained the gas flow necessary to adequately supply the area in question.

The converting of a system is not a difficult procedure.

The big advantage realized from the work is an ultimate reduction in customer complaints, and an improvement in customer service which will result from the even and steady gas pressure on the customer's appliances.

MR. PRICE:

What Bill Fraser has said substantiates our idea. I believe that we will progress along these lines, as the loads increase: Pressure increase will be provided by centrifugal boosters. We will also provide a high pressure storage holder of some type, where distribution is made from one central point to furnish pressure in the event of the failure of the natural gas supply.

That is the fundamental plan and, of course, with house regulators it appears to be the most economical thing to do over a period of time to meet the increased loads.

Q. *How has conversion affected the appliance servicing work load?*

MR. BROWN:

The immediate effect of conversion is an increase in the amount of servicing required. This is because of defective appliances—appliances that were defective under manufactured gas, and were not completely cleared up during the conversion.

Some people who have had an appliance for 30 years with never a scratch, suddenly find that as soon as they are converted over to the natural gas the enamel has become scratched.

Since people can't wait for the water to heat on manufactured gas, many heaters will be very much over-gassed. With natural gas, they will have to set them pretty close to the rating or combustion troubles will result.

The immediate effect during conversion has been that the number of complaints will increase about 30%, returning in from one to three months to the level that prevailed with manufactured gas.

Then, after about a year spent in clearing up the ones that require the most effort, the volume dwindles to a point considerably below that ever before encountered.

In 1952, as an example, the number of pilot complaints per 1000 customers per year on the manufactured gas was 118, as compared to 24 on natural gas.

House heating pilot complaints were 177 on manufactured gas, as compared to 140 on the natural gas.

MR. PRICE:

I want to agree with what Mr. Brown has said. After the storm and the fury of conversion was over, we experienced a lessening in the number of appliance complaints. It has taken two months to get back to what we consider normal.

This is based on a preconversion rate of appliance complaints per year.

MR. FRASER:

Our experience has been about the same. It takes about a year to get back to normal. After that the curve will probably go below normal as compared with the manufactured gas experience.

Q. *What changes have you made in your service policies?*

MR. BROWN:

Because of our dual system (manufactured and natural), we have had to go out and convince people that the service is equal with natural gas. So, for a period following conversion, we give more free service than we ordinarily would to natural gas users.

Then, after things have finally returned to normal, we revert to our normal policy of limiting free service to faults directly traceable to the gas, or to actual faults committed during conversion.

Q. *Are you decreasing your periodic cleaning and servicing schedules on central heating equipment?*

MR. MORAN:

The extent of a decrease in the volume of that type of work seems to be a matter of company policy. It is one thing to have a few hundred householeating jobs on manufactured gas, with 200,000 and 300,000 customers; and quite another to have around 70,000, as we now have after only a few years.

You have to decide whether you are going to just supply the fuel and be sure that it is used safely or whether you are going into the furnace repair business.

To illustrate what was necessary with such a spiraling load: Our policy before the advent of the distribution of natural gas generally was for the serviceman to check about 30 points on a householeating inspection card. Today, however, that same card has about 10 points to be checked, and they have to do primarily with the full safety of the appliance.

If, under this policy, the serviceman cannot be absolutely sure that it is in a safe condition, he tells the customer about it; he tags it, and advises the customer that he should have his heating man or the furnace man make the necessary repairs.

By establishing that change in policy, it has been possible for this company to handle the work load on the greatly increased number of heating jobs with very few more people and vehicles.

One of the things that contributed largely to that is the general use of radios in the servicemen's vehicles to make faster dispatches and get more calls per man per day.

A good dealer and contractor training and educational program will help this program.

It is very important to get the local furnace contractor, the heating contractor and others in on this at the beginning.

Q. *Cal, how about your periodic furnace cleaning? Have you cut down on it in Rochester?*

MR. BROWN:

Yes, there is a marked decrease in our cleaning in the natural gas area. Some units on manufactured gas that had to be cleaned every year now go along for two or three years, and then require a minimum of cleaning.

Up to last August, we supplied manufactured gas, made up mainly of coke oven gas and producer gas, natural gas enriched. We shut down the oven last August and since then have used catalytically cracked natural gas in our system. Already we have some evidence that we will have beneficial effects in our gas system due to the fact that we are distributing sulfur-free gas made by this process.

Q. *Have pilot outages increased?*

MR. BROWN:

Pilot outages on natural gas have been very much less than in the manufactured gas system. Some of the reasons are that we have been careful not to have a reversal of the flow, or where we have had the reversal of the flow during conversion, we have been careful in maintaining the pressures to avoid making that reversal quickly and thus stirring up a cloud of dust.

We have tried to keep the dust under control. We have filters installed at the district regulators.

We install pilot filters whenever we have pilot trouble on any domestic appliance, and we install pilot filters on all householeating jobs at the time of the conversion to natural gas. We use the combination dust and gum-type filters, even though evidence of gum has been small.

MR. BUNNELL:

Outside of an occasional dust storm, we don't have trouble with pilot outages. Our regulator program takes care of that: not only does it maintain a constant pressure, but because of regulation to 4-in. water column, the pilot orifices are larger and do not plug so readily.

MR. PRICE:

Our pilot outages have decreased. During conversion, we ran a 100% inspection of every job done by our own experienced customer servicemen. The significance of this is that in many cases of the older type pilots which were troublesome, they were replaced on our inspector's advice.

Q. *What has experience indicated on low-pressure system pressure variations and the range over which appliances will function with natural gas?*

MR. BUNNELL:

I would like to concur with Bill Fraser in what he said about the low-pressure system. One step we took in our company to handle the increased load was to put in appliance regulators.

If the saturation of the space heating on a company's lines does not exceed 60%, the company won't have to convert to pounds if it has an appliance regulator program. Above 60% we make a conversion to pounds, similar to that which Bill Fraser described.

However, the general solution was the installation of the Rangelator.

We installed the Rangelator in the fuel line at a location to include range, water heater, gas refrigerator, etc. We have installed some 150,000 regulators, so that we now have appliance regulators governing every appliance on the premises; with this arrangement, pressures in the street can fluctuate widely and a con-

stant pressure will still be maintained at all the appliances.

Without this kind of regulation, if a range oven bead is adjusted when the pressure is down to 4 in., the oven will overheat and keep right on cooking at 8- or 10-in. pressure with a modern insulated oven. On the other hand, if adjustment is made when the pressure is high, the bead flame will go out in case of a drop to 4 in.

Rangelators permit us to fluctuate pressures in the street from 4 to 10 in., giving us the possibility of a 60% saturation of space heating (which we have in many of our areas) and answering the problem of the winter peak load.

Again let us say, if more than the equivalent of a 60% space heating load is anticipated, we could convert to pounds pressure, but the cost would be greater, and the distribution losses on a low pressure system at 2 lbs is really something. With our system at 12-in. water column, the losses are less and even the 12 in. is maintained only as needed.

MR. FRASER:

There is no question that manufactured gas will burn on a burner over a wider range of pressure than will natural gas.

It seems to me that a burner throat gas can vary with manufactured gas, and give good combustion results, in the neighborhood of about 200 Btu. With the natural gas, the range is about 120 to 130 Btu.

This means that initial adjustments with natural gas must be made more carefully than is necessary with the manufactured gas.

Also, the latter statement ties in to an observation made a few moments ago by Mr. Moran, when he said that overgassing of appliances cannot be practiced with natural gas to the extent possible with manufactured gas.

Q. *What effect has conversion, including fogging and humidification, had on meters?*

MR. PRICE:

As to the effects of oil fogging, I think I said earlier in the session that we could not prove and did not believe that oil fogging had any very substantial benefit in the performance of meters.

Q. *What are you doing about odorization? Are you depending on the transmission company for it?*

MR. MORAN:

It is good business to re-odorize at the city gate. You may require much higher odor intensity in the early days of your changeover than you do later, but your pipeline company probably isn't in a position to vary that intensity up and down.

The first weeks of the changeover seem to me to be a critical period, and a company must have its odorizing under control, and its practices should lean toward the high side of the recommended quantities.

Q. *How does the intensity of the odorant hold up throughout the system? What type of test is used?*

MR. MORAN:

There is a definite period when the commercial odorants are pretty largely absorbed by passing the gas through the main system. It is necessary to build up some degree of saturation of the deposit in the system before the material begins to get through to the far end.

I see no way of determining the intensity of an odor other than by the smell test. Chemical analyses of one form or another will tell the amount of sulfur, etc., and that is probably a good indicator; but the effectiveness of odorant is a sensation reflected only in the human sense of smell. Therefore, our practice has been to make a smell test at the extreme end of the system. Results of these are filed and kept for possible reference.

In recent months there has become available a method of calibrating the smell test by odor indicators, which we have used for several months. We think that this is a very good adjunct, and it is a good thing to have to verify the records in case of litigation involving the matter of odor.

The practice we have settled on is to control the odor intensity up to the point where a threshold reading can be obtained at .2%; and we have found, by verification with the different individuals and the instruments, that it corresponds very closely to .5% for ready detectability.

Further than that, our operators are instructed that, in any event, they are to maintain the rate not lower than the suppliers' recommended parts per million. In other words, we try to play it pretty safe. It doesn't cost much to do that, once the equipment is set up. Another .1 lb per million doesn't cost much.

MR. JONES:

We odorize at all city gate points in each of our companies. We haven't used odor testers to any degree.

At the present time we use the smell test, influenced in part by the number of leak complaints.

The incoming natural gas is odorized by the pipeline people, and in nine of our properties we add .5 to .6 lbs of Captan per MMcf and at four of our stations we add from .8 to 1.2 lbs of Calodorant *C* per MMcf. With this addition of odorants, we are not having any special difficulty in detecting leaks.

MR. PRICE:

We are odorizing at all distribution centers, using instrumentation in every case. (I refer to the odorimeter.) We are taking daily tests and recording them. We are running a threshold level as low as we can, and right now we are able to get down to .03% detectability in air.

This is pretty low, but we haven't experienced any appliance complaints from the intensity of the odor.

Q. *What have you found to be the limit of the percentage of high-Btu heavy oil gas that can be mixed with natural gas?*

MR. FRASER:

It has been found that gas made from light oils in converted water gas sets equipped for oil firing can be mixed with natural gas in percentages up to a maximum of 35% without causing combustion complaints.

It is to be remembered, however, that the change of odor of a natural gas containing as little as 5 to 10% of oil gas can be expected to cause a large increase in odor complaints from customers.

When the percentage of oil gas in natural gas is increased to 45 or 50%, such

a mixture can be tolerated. Above, let us say, 50%, complaints of noisy or flashback burners or yellow-tip flames can be expected, and the number of complaints received will make their handling difficult.

In the particular area in question, it was found that a 75 gravity 900- to 920-Btu oil gas gave better operation and was more easily produced than gases of a higher thermal value. The base natural gas is the so-called high gravity, low Btu, low methane gas.

It is better for the customer to have a product that he can satisfactorily utilize at a slight Btu disadvantage than it is to supply a normal thermal value with a gas that has poor utilization characteristics.

Q. *What has been the effect of scrubbing of the manufactured gas?*

MR. FRASER:

Very little experience has been had scrubbing manufactured heavy-oil gas. No scrubbing has been attempted in the Detroit area, and the effects of condensate have not been troublesome.

In one of the other districts of the company the dropping out of condensate, especially in water heater pilots, was very troublesome and much better conditions were obtained by the use of contact oil scrubbing prior to the time the gas was sent to distribution.

MR. JONES:

Our water gas sets were converted to high Btu operation on the basis of light oil operation; no scrubbing equipment was used.

During the past winter, at several plants and on many occasions, we have sent out 35% oil gas with our natural without complaints.

In two cases we sent out as high as 50% for short periods and had no complaints that we could attribute to that condition. It so happens that the gas was cooled to 40° in the holders, and this may have resulted in some scrubbing.

MR. FRASER:

The maximum number of complaints can be expected on the third or fourth day. There will be a few that will come in the first day, and there will be a few more that will come in on the second day. But on the third day customers who have tolerated sub-normal service for a short time will start making complaints in large numbers. It is folly for a company to pass judgment on the quality of supplemental gas after only a few hours of distribution experience.

MR. MORAN:

A year ago, in the eastern division of the system around Troy and Schenectady, we found it necessary to make some substantial quantities of oil gas, and we found an answer quite consistent with what has been said up to now. Mixtures at 30 to 35% unscrubbed, with natural gas seem to be satisfactory.

I will say that you do immediately get odor complaints. In that connection, in order to get the best possible usage, we are completing installations of oil-scrubbing at all plants. It is my understanding that we can raise the 35% to as high as 65 or 70%, with the same results.

MR. BUNNELL:

The time element has a lot to do with it. We normally send out no more than 30% high Btu oil gas. In an emergency, we sent out 100% high-Btu gas of 950 in one area, and where it is only a matter of hours, and less than a day in any event, we got by with not more than 15 or 20% increase in complaints.

For any prolonged period, however, it had better be down to 35 or 40%, I would say.

Q. *How do you handle the assignment and transfer of personnel when a regularly operating plant becomes a standby and peak shaving operation?*

MR. FRASER:

When a water gas plant which has been operating regularly with personnel on normal hours per week is placed on a standby, peak shaving basis, experience has shown that a reduction of plant personnel from 40 to 60% can be made, depending upon the facilities which comprise the plant and the degree of inactivity of such components as holders, gas pumping equipment, regulating and gas conditioning equipment, etc. The actual average per four major plants shows a reduction in personnel of 55%.

Now, what I have said means that the distribution facilities of these plants are to be operated. Each one of these plants is a city distribution outlet with holders and gas pumps for supplementing the supply to the system.

In these plants the boilers must be kept operating at all times during the winter months. With the standby organization it is contemplated that personnel will be maintained to get the plants into production promptly and continue operation using crews on two 12-hr shifts, and perform all necessary maintenance and housekeeping for efficient operation.

In reducing personnel, the persons not required will consist primarily of ordinary labor, coal and ash handlers, oil and tar pumpers, gas maker's helpers, and helpers in gas pressure operation.

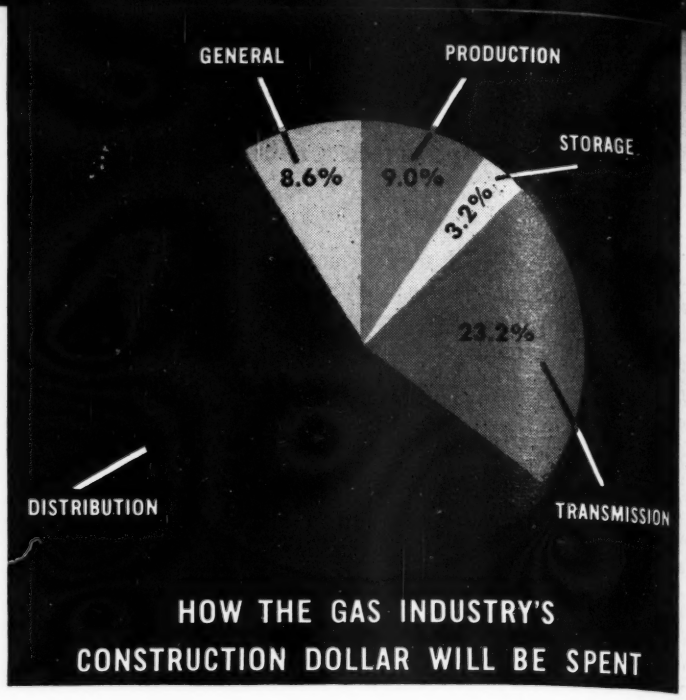
These men can normally be used in other departments of the company in jobs such as street department labor, street machine operators, service department fitters, stock handlers, garage repairmen and some others, depending upon the individual skill and education of the men involved.

In the other departments the plant operators can be carried on a plant reserve status subject to call on short notice. Experience has shown that the reserve men can be returned to the plant and assume their old jobs within 8 to 12 hours after a request.

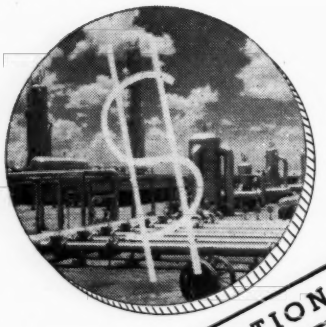
Periodic return to the plant for a refresher on gas production jobs is desirable to ascertain the continued fitness of the individual to perform the plant work, and his availability. This refresher period is best scheduled when the plant is operating, either when operation is required or by means of plant practice operations once or twice a month, especially in cold weather.

A condition which must be tolerated is the quality of the men left in the plant. Naturally, the better gas men are retained, and these are the men in the classifications which carry the higher rates. These men must handle work of lesser classifications and management must tolerate the higher wage rate for the lesser work, and the men must tolerate performing the lesser work.

I might say that the latter statement is the more important and, therefore, the retained men must be carefully selected.



HOW THE GAS INDUSTRY'S CONSTRUCTION DOLLAR WILL BE SPENT



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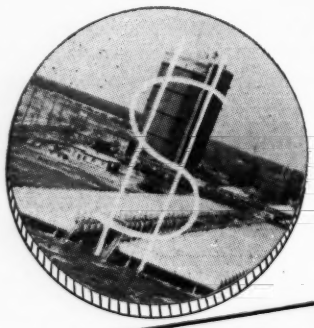

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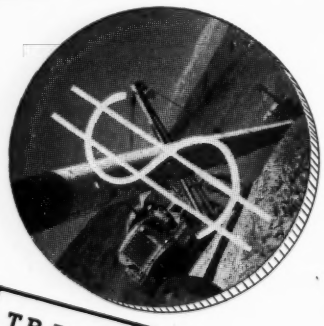

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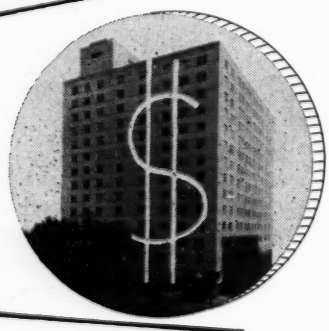


GENERAL

1953 building budgets of 125 utilities: $492 million

IN the quickening race to serve new meters, increase househeating saturation, and assure to the nation its most dependable fuel service, 125 major gas distributing companies have budgeted slightly less than a half-billion dollars in 1953.

In this, the broadest *GAS* utility survey to date, these 125 companies expressed their intentions to lay 4769 miles of distribution mains (service not included) at a total cost of $108,994,580 to widen their sphere of activity. To bring in natural gas from other sources, they plan to push transmission lines out from city gates a total distance of 1241 miles, at a cost of $34,447,956.

Distribution: $275 million

Distributionwise, the bulky $108 million figure is incomplete; with meters and regulators, house piping, construction equipment, and other necessary items added, the total outlay reaches $275,478,550.

Not only will these utilities lay transmission facilities to increase their gas supplies—many will increase production facilities. Companies such as those in Pennsylvania, particularly, do their own drilling, and of the $44,146,470 ticketed for this category, $16,607,058 will be spent for this single item. Plant expenditures, covering chiefly peak shave, standby, and reforming apparatus, total $27,539,432.

Pressure boosts: $2½ million

Pressures must be increased in the systems of 15 companies, and more than $2½ million will be spent on this phase of operations. More than a dozen companies will be converting all or a portion of their systems to natural or L.P. gas, and nearly $2 million has been set aside to accomplish the change.

Enlarged operations always call for new administrative facilities, such as office buildings and more efficient office systems. Nearly $9 million will be spent on the former, while slightly less than $3 million is set up for streamlining of administrative methods and purchasing new office equipment.

Breakdowns of how each company will spend its construction dollars in 1953 appear on the following pages.

1953 building budgets of 125 utilities: $492 million

ALLOCATIONS FOR PRODUCTION

Company	Plant Expenditures	Drilling Expenditures	Total
Atlanta Gas Light Co.	$ 306,000	$	$ 306,000
Arkansas Louisiana Gas Co.		2,440,338	2,440,338
Arkansas Western Gas Co.	50,000	300,000	350,000
Brockton-Taunton Gas Co.	71,577		71,577
Brooklyn Borough Gas Co.	15,000		15,000
Brooklyn Union Gas Co.	900,000		900,000
Cambridge Gas Light Co.	165,000		165,000
Chattanooga Gas Co.	114,000		114,000
Cincinnati Gas & Electric Co.	163,000		163,000
Cities Service Gas Co.	2,586,000	200,000	2,687,000
Citizens Gas & Coke Utility	1,708,718		1,708,718
City of Norwich Dept. of Public Utilities	18,000		18,000
Company A	560,000	2,065,510	2,625,510
Consolidated Edison of N. Y.	300,000		300,000
Consolidated Gas Electric Light & Power Co.	200,000		200,000
Delaware Power & Light Co.	149,000		149,000
East Ohio Gas Co.	201,000		201,000
Empire Southern Gas Co.	560,000	40,000	600,000
Florida Power & Light Co.	114,700		114,700
Greenwich Gas Co.	6,100		6,100
Hartford Gas Co.	162,000		162,000
Haverhill Gas Light Co.	6,000		6,000
Illinois Power Co.	20,000		20,000
Indiana Gas & Water Co.	84,000	35,000	119,000
Kansas-Nebraska Natural Gas Co.	1,010,000	1,640,000	2,650,000
Kings County Lighting Co.	5,000		5,000
Laclede Gas Co.	51,000		51,000
Lone Star Gas Co.			6,302,000*
Long Island Lighting Co.	888,000		888,000
Manchester Gas Co.	13,000		13,000
Michigan Consolidated Gas Co.	339,875		339,875
Milwaukee Gas Light Co.	132,000		132,000
Minneapolis Gas Co.	810,848		810,848
Montana Dakota Utilities Co.	827,800	375,200	1,203,000
New Bedford Gas & Edison Light	119,000		119,000
New Haven Gas Light Co.	2,000		2,000
New Jersey Natural Gas Co.	250,000		250,000
Newport Gas Light Co.	110,167		110,167
North Shore Gas Co.	7,000		7,000
Northern States Power Co. (Minneapolis)	412,000		412,000
Northern States Power Co. (Wisconsin)	44,325		44,325
Northwestern Public Service Co.	600		600
Ohio Fuel Gas Co.		850,000	850,000
Oklahoma Natural Gas Co.	22,003	1,603,010	1,625,013
Pacific Gas & Electric Co.	85,000		85,000
Peoples Gas Light & Coke Co.	200,000		200,000
Peoples Water & Gas Co.	209,800		209,800
Petersburg & Hopewell Gas Co.	20,000		20,000
Philadelphia Electric Co.	640,000		640,000
Philadelphia Gas Works	7,302,000		7,302,000
Portland Gas & Coke Co.	533,600		533,600
Providence Gas Co.	500,000		500,000
Public Service Elec. & Gas Co.	3,800,000		3,800,000
Republic Light, Heat & Power	15,000		15,000
San Diego Gas & Electric Co.	64,000		64,000
Seattle Gas Co.	65,000		65,000
Sierra Pacific Power Co.	54,700		54,700
South Carolina Elec. & Gas	101,700		101,700
South Jersey Gas Co.	30,700		30,700
Southern Ind. Gas & Elec. Co.	12,200		12,200
Union Gas System Inc.	32,000	15,000	47,000
Wisconsin Fuel & Light Co.	5,000		5,000
Wisconsin-Michigan Power Co.	6,799		6,799
Wisconsin Power & Light Co.	14,900		14,900
Wisconsin Public Service Corp.	26,000		26,000
Worcester Gas Light Co.	317,000		317,000
Total	**$27,539,412**	**$16,607,058**	**$44,146,470**

WHERE STORAGE DOLLARS WILL GO

Company	Holders	Underground	Underground Pipe	Total
Cambridge Gas Light Co.	$260,000	$	$	$ 260,000
Central Illinois Light Co.		100,000		100,000
Cities Service Gas Co.		1,956,000		1,956,000
Citizens Gas & Coke Utility		359,950		359,950
City of Duluth	43,000			43,000
Coast Counties Gas & Elec.			110,000	110,000
Company A		1,828,575		1,828,575
East Ohio Gas Co.				698,000*
Indiana Gas & Water Co.		28,000	57,000	85,000
Kings County Lighting Co.	3,000			3,000
Long Island Lighting Co.	24,000			24,000
Memphis Light, Gas & Water Div.				1,000,000*
Minneapolis Gas Co.	29,000			29,000
Montana-Dakota Utilities				20,000*
Northwestern Public Service Co.	13,000			13,000
Ohio Fuel Gas Co.		2,600,000		2,600,000
Oklahoma Natural Gas Co.		290,421		290,421
Pacific Gas & Electric			625,000	625,000
Philadelphia Electric Co.			3,200,000	3,200,000
Republic Light, Heat & Power			26,000	26,000
San Diego Gas & Electric			922,000	922,000
Sierra Pacific Power Co.	32,000			32,000
Southern California Gas	71,000			71,000
Southern Counties Gas	500		3,500	4,000
Southern Indiana Gas & Electric		760,000		760,000
Superior Water, Light & Power	2,500			2,500
Union Gas System, Inc.		45,000	5,000	50,000
Washington Gas Light Co.				800,000*
Wisconsin Power & Light	1,100			1,100
Total	**$479,100**	**$7,967,946**	**$4,948,500**	**$15,892,546**

*No breakdown given.

COMPANIES CHANGING FUELS

Company	Amount To Be Spent	Type of Gas
Alabama Gas Corp.	$ 20,000	Natural (partial)
Atlanta Gas Light Co.	75,000	Natural & Propane-air
Brockton-Taunton Gas Co.	41,000	Natural*
Cambridge Gas Light Co.**		Natural
City of Norwich Dept. of Public Utilities	80,000	Natural
Consolidated Edison Co.**		Converting more areas in territory to natural
Delaware Power & Light**		Natural
Hartford Gas Co.	233,000	Natural & coke-oven mixture
Long Island Lighting	100,000	Natural
New Bedford Gas & Edison Light Co.	50,000	Natural
New Haven Gas Light Co.**		Natural & coke-oven mixture
New Jersey Natural Gas Co.	150,000	Natural in one division
Providence Gas Light Co.	1,000,000	Natural
Total	**$1,749,000**	

*Pending FPC approval.
**No figure given.

1953 building budgets of 125 utilities: $492 million

Company	Total Expenditures	Production	Storage	Transmission Total	Transmission Miles of New Line	Distribution Total	Distribution Miles of New Main	General
Alabama Gas, Birmingham	$ 3,918,000					3,368,000	120	550,700
Arizona P. S. Co., Phoenix	2,133,250					2,134,250	75	59,500
Atlanta (Ga.) Gas Light	5,600,000	306,000				5,147,000	140	147,000
Ark.-La. Gas, Shreveport	14,381,607	2,440,338		8,634,607	81	2,910,590	130	396,072
Ark.-Western Gas, Fayetteville	1,000,000			352,000	6	272,000		25,000
Bluefield (W. Va.) Gas Co.	20,000					20,000	4	
Brockton-Taunton (Mass.) Gas	500,462	71,577		100,655		304,318		23,912
Brooklyn Borough Gas Co.	285,000	15,000				227,000	2.25	43,000
Brooklyn Union Gas Co.	4,186,000	900,000				3,186,000	20	100,000
Cambridge (Mass.) Gas Light	958,800	165,000	260,000			494,300	2	39,500
Central E&G, Sioux Falls, S.D.	1,500,000					1,500,000		
Central Hudson G&E, Poughkeepsie, N.Y.	531,000			140,000	2	321,000	10	85,000
Central Illinois Light, Peoria	1,000,000		100,000			1,000,000		50,000
Central Illinois P. S. Co., Springfield	1,109,000			591,000	25	467,000	12	51,000
Central West Utility, Kansas City, Mo.	352,000			140,000	17	210,000		2,000
Chattanooga (Tenn.) Gas	902,500	114,000				731,500		57,000
Cheyenne (Wyo.) Light	187,000					187,000	12	
Cincinnati Gas & Electric	3,927,000	163,000		482,000	1.6	3,208,000	40	74,000
Cities Service Gas, Oklahoma City	9,911,000	2,786,000	1,956,000	4,609,000		97,000		463,000
Citizens Gas & Coke, Indianapolis	3,875,366	1,708,718	359,950			1,489,518	60	317,180
Citizens Gas, Hannibal, Mo.	75,000					75,000	3	
Citizens Gas Fuel, Adrian, Mich.	67,875					54,200		13,912
City Gas Co., Flemington, N.J.	101,000					90,000		11,000
City of Corpus Christi (Texas)	285,912					285,912	31	
City of Duluth (Minn.)	168,800		43,000			117,500		8,300
City of Houston (Texas)	230,000					230,000		
City of Huntsville (Ala.)	50,000					50,000		
City of Norwich (Conn.)	158,000	18,000				126,000	1	14,000
City of Richmond (Va.)	1,023,383					995,100	29.3	28,283
City of San Antonio (Texas)	1,858,200					1,855,000		58,200
City Utilities, Springfield, Mo.	631,315					464,515	7.2	166,800
Coast Counties G&E, San Francisco	1,934,000		110,000			2,007,000	85	37,000
Company "A"	7,227,820	2,625,510	1,828,575	458,684		1,858,856	21	456,195
Consolidated Edison, New York	6,000,000	300,000				5,000,000		7000,000
Consolidated Gas, Baltimore	5,200,000	200,000				5,000,000	86	
Consolidated Gas, Oklahoma City	1,000,000							1,000,000*
Consumers Power, Jackson, Mich.	12,500,000							12,500,000*
Danbury (Conn.) Bethel G&E	28,500					28,500		
Dayton (Ohio) Power & Light	2,784,600					2,779,600	85	5,000
Delaware Power, Wilmington	1,109,000	149,000		150,000		693,000		117,000
East Ohio Gas, Cleveland	16,100,000	201,000	698,000	8,384,000	112.6	6,322,000	175	495,000
Empire Southern Gas, Fort Worth	900,000	600,000		60,000	7	240,000		
Florida Power & Light, Miami	613,650	114,700				435,750	8	63,200
Gas Service Co., Kansas City, Mo.	5,032,000					5,032,000		
Greenwich (Conn.) Gas Co.	58,630	6,100				47,105	1.75	5,425
Hartford (Conn.) Gas Co.	780,000	162,000				472,900	9.5	145,100
Haverhill (Mass.) Gas Light Co.	125,000	6,000				105,000		14,000
Illinois Power Co., Decatur	3,650,000	20,000				3,080,000		550,000
Indiana Gas & Water, Indianapolis	1,923,000	119,000	85,000	395,000		1,220,000		49,000
Indiana Gas Distribution Co., Danville	5,000							5,000
Iowa-Illinois G&E, Davenport	4,470,000					4,274,000		145,000
Iowa Power & Light, Des Moines	1,462,000					1,462,000	60-75	
Iowa Public Service, Sioux City	765,000							765,000
Kan.-Neb. Natural Gas, Hastings, Neb.	5,915,000			2,030,00	218	855,000	100	380,000
Kings County Lighting, Brooklyn, N.Y.	50,000	5,000	3,000	3,000		3,000		36,000
Knoxville (Tenn.) Utilities Board	76,600					61,600	3	15,000
Laclede Gas Co., St. Louis	4,610,000	51,000				4,076,000	69	483,000
Lone Star Gas Co., Dallas	28,038,000	7,043,000		11,264,000		9,731,000		
Long Island Lighting Co., Mineola, N.Y.	6,282,000	888,000	24,000	1,256,000	10	4,109,000		5,000
Louisiana Light & Power, New Orleans	1,003,000					1,003,000	50	45,000
Madison (Wis.) Gas & Electric Co.	330,897					318,577	3.5	12,320
Manchester (N. H.) Gas Co.	103,975	13,000				78,750	2	7,225

*No breakdown given.

Company	Total Expenditures	Production	Storage	Transmission Total	Transmission Miles of New Line	Distribution Total	Distribution Miles of New Main	General
Memphis (Tenn.) Light, Gas & Water	3,016,782		1,000,000			1,086,582		1,285,000
Metropolitan Utilities District, Omaha	1,100,000					1,100,000	33	
Michigan Consolidated Gas, Detroit	18,169,560	339,875		62,060		13,390,394	172	4,377,231
Milwaukee (Wis.) Gas Light Co.	5,600,000	132,000				4,976,000	23.5	483,000
Minneapolis (Minn.) Gas Co.	5,556,065	810,848	29,000			4,042,025	83	674,162
Missouri Power & Light, Jefferson City	500,000					500,000	15	
Mobile (Ala.) Gas Service Co.	1,427,500					1,201,550	27	226,000
Montana-Dakota Utilities, Minneapolis	5,112,300	1,203,000	20,000	1,929,100	72	1,575,000	100	385,000
Nashville (Tenn.) Gas Co.	762,000					730,000	25	32,000
New Bedford (Mass.) Gas	673,500	119,000				415,000	11.5	139,500
New Haven (Conn.) Gas Light Co.	600,000	2,000				590,000	10	8,000
New Jersey Natural, Asbury Park	1,500,000	250,000				1,000,000	70	250,000
Newport (R. I.) Gas Light Co.	168,467	110,167				34,911	1.5	13,389
North Shore Gas Co., Waukegan, Ill.	613,600	7,000				541,600	23	65,000
Northern Indiana P. S. Co., Hammond	5,905,400					5,062,000	100	843,400
Northern States Power, Minneapolis	3,668,000	412,000				3,181,000		75,000
Northern States Power, Eau Claire, Wis.	138,610	44,325				94,285		
Northwestern P. S. Co., Huron, S. D.	376,000	600	13,000			300,100	35	62,300
Ohio Fuel Gas Co., Columbus	18,000,000	850,000	2,600,000	6,500,000	80	7,300,000	200	750,000
Ohio Gas Co., Bryan	187,200			43,200		124,440	7	19,560
Oklahoma Natural Gas Co., Tulsa	13,354,156	1,625,013	290,421	5,285,834	170	2,428,814	206	2,104,200
Old Colony Gas, Braintree, Mass.	142,000					131,000	8	9,000
Pacific G&E Co., San Francisco	50,458,000	85,000	625,000	37,000,000		12,648,000	690	100,000
Peoples Gas Light & Coke, Chicago	14,227,000	200,000		3,618,000	18.6	8,989,000	45.5	1,420,000
Peoples Natural Gas Co., Pittsburgh	12,731,700			1,024,000		11,707,700	38	
Peoples Water & Gas, North Miami	763,215	209,800		10,000		538,415	22	5,000
Petersburg (Va.) & Hopewell Gas Co.	325,000	20,000				285,000	20	10,000
Philadelphia Electric Co.	9,092,000	640,000	3,200,000	1,404,000	3.5	3,810,000	75	38,000
Philadelphia Gas Works	14,987,000	7,302,000				5,985,000		1,700,000
Portland (Ore.) Gas & Coke Co.	1,229,600	533,600				647,000		49,000
Portland (Me.) Gas Light Co.	10,000					10,000		
Providence (R. I.) Gas Co.	1,900,000	500,000				1,400,000	30	
P. S. Co. of Colorado, Denver	6,538,000			980,000	60	4,674,000		884,000
Public Service E&G, Newark, N.J.	38,000,000	3,800,000		2,900,000	16	30,600,000	200	700,000
Roanoke (Va.) Gas Co.	75,000					50,000		25,000
Republic Light, Heat & Power, Buffalo	628,000	15,000	26,000	129,000		344,000		114,000
San Diego Gas & Electric Co.	4,006,000	64,000	922,000	23,000		2,358,000	75	639,000
Seattle (Wash.) Gas Co.	200,000	65,000				130,000		5,000
Sierra Pacific Power Co., Reno, Nev.	337,900	54,700	32,000			234,600		16,600
South Carolina Electric & Gas, Columbia	927,000	101,700				591,300	18	50,000
South Jersey Gas Co., Atlantic City	902,200	30,700				681,000		115,400
Southeastern Michigan Gas, Port Huron	200,000					200,000		
Southern California Gas, Los Angeles	32,884,000		71,000	10,976,000	79	19,587,000	247	2,250,000
Southern Counties Gas, Los Angeles	15,640,000		4,000	2,848,000	188.3	12,228,000	250	560,000
Southern Indiana G&E, Evansville	1,369,600	12,200	760,000			570,400	10	27,000
Southwestern P. S. Co., Amarillo	263,020					258,070	21	4,950
Superior (Wis.) Water, Light & Power	41,800		2,500			38,800	1	500
Tampa (Fla.) Gas Co.	60,000					60,000		
Tucson (Ariz.) GEL&P Co.	566,000					566,000	100	
Union Gas System, Independence, Kan.	544,150	47,000	50,000	91,370		304,025		51,755
Union Light, Heat & Power, Cincinnati	482,000					440,000	9	21,000
Virginia Electric & Power, Richmond	1,090,700					968,000	35	122,700
Washington (D. C.) Gas Light Co.	7,500,000		800,000	100,000		6,000,000	12.8	600,000
West Ohio Gas Co., Lima	795,225			221,000	11.3	549,225	37.8	25,000
West Tennessee Gas Co., Jackson	193,500					193,500	5	
Westfield (Mass.) Gas & Electric	50,000					50,000	1.5	
Wisconsin Fuel & Light, Manitowoc	80,000	5,000				70,000		5,000
Wis.-Mich. Power Co., Appleton, Wis.	258,389	6,799		59,090	8	113,500	3.5	79,000
Wisconsin Natural Gas Co., Racine	1,532,000					1,300,000		232,000
Wisconsin Power & Light, Madison	780,603	14,900	1,100			744,553	7	20,050
Wisconsin Pub. Serv. Corp., Milwaukee	1,086,000	26,000				990,000	20	70,000
Wisconsin Southern Gas, Lake Geneva	94,860					68,010	7	3,850
Worcester (Mass.) Gas Light Co.	905,930	317,000				531,130	14.6	57,800
Total	**$492,334,800**	**44,146,470**	**15,892,546**	**114,253,600**	**1240**	**275,478,550**	**4769**	**42,563,634**

ALLOCATIONS FOR NEW OR IMPROVED OFFICE SYSTEMS

Company	Amount
Alabama Gas Corp.	$ 40,000
Atlanta Gas Light Co.	77,000
Arkansas-Louisiana Gas Co.	61,962
Arkansas Western Gas Co.	5,000
Brockton-Taunton Gas Co.	1,000
Brooklyn Borough Gas Co.	8,000
Central Hudson Gas & Elec.	20,000
Central Illinois Light Co.	25,000
Central Illinois Public Serv.	20,000
Chattanooga Gas Co.	35,000
Cincinnati Gas & Electric	1,000
Cities Service Gas Co.	26,000
Citizens Gas & Coke Utility	67,180
Citizens Gas Fuel Co.	4,290
City of Duluth	2,800
City of Norwich	2,000
City of Richmond	11,103
City Public Service Board of San Antonio	200
City Utilities of Springfield	5,000
Company A	24,500
ConEd of New York	400,000
Coast Counties Gas & Elec.	22,000
Hartford Gas Co.	8,900
Haverhill Gas Light Co.	3,000
Illinois Power Co.	10,000
Indiana Gas & Water Co.	15,000
Iowa-Illinois Gas & Elec.	109,000
Kansas-Nebraska Natural Gas	20,000
Kings County Lighting Co.	4,000
Laclede Gas Co.	51,000
Madison Gas & Electric Co.	10,582
Manchester Gas Co.	7,225
Memphis Light, Gas & Water Div.	47,500
Michigan Consolidated Gas	129,757
Milwaukee Gas Light Co.	40,000
Minneapolis Gas Co.	599,162
Mobile Gas Service Corp.	20,000
Montana Dakota Utilities Co.	36,000
Nashville Gas Corp.	7,000
New Bedford Gas	5,000
New Haven Gas Light Co.	5,000
New Jersey Natural Gas Co.	50,000
Newport Gas Light Co.	2,500
North Shore Gas Co.	17,200
Northern Ind. Public Service	30,500
Ohio Fuel Gas Co.	100,000
Ohio Gas Co.	1,070
Oklahoma Natural Gas Co.	198,700
Old Colony Gas Co.	1,000
Peoples Gas Light & Coke Co.	131,000
Peoples Water & Gas Co.	5,000
Petersburg & Hopewell Gas	5,000
Philadelphia Gas Works	50,000
Portland Gas & Coke Co.	7,500
Republic Light, Heat & Power	7,000
San Diego Gas & Electric	25,000
Seattle Gas Co.	5,000
South Jersey Gas Co.	22,600
Southern California Gas Co.	135,000
Southern Counties Gas Co.	100,000
Southern Ind. Gas & Electric	4,600
Union Gas System Inc.	2,595
Washington Gas Light Co.	55,000
Wisconsin Fuel & Light Co.	5,000
Wisconsin Public Service Co.	56,000
Wisconsin Southern Gas Co.	2,000
Worcester Gas Light Co.	21,800
Total	**$2,927,626**

BUDGETS FOR ADMINISTRATIVE BUILDINGS AND FACILITIES

Company	Amount
Alabama Gas Corp.	$ 180,000
Atlanta Gas Light Co.	2,000
Arkansas-Louisiana Gas	144,000
Cambridge Gas Light	3,000
Chattanooga Gas Co.	22,000
Cincinnati Gas & Electric Co.	15,000
Citizens Gas & Coke Utility	250,000
Citizens Gas Fuel Co.	4,000
City Gas Co. of N. J.	20,000
City Public Service Board of San Antonio	27,000
City Utilities of Springfield, Mo.	150,000
ConEd of N. Y.	300,000
Coast Counties Gas & Electric	15,000
Company A	100,000
Florida Power & Light	50,000
Greenwich Gas Co.	5,000
Kansas-Nebraska Natural Gas Co.	150,000
Kings County Lighting	27,000
Laclede Gas Co.	98,000
Memphis Light, Gas & Water Div.	1,000,000
Michigan Consolidated Gas Co.	117,941
Milwaukee Gas Light Co.	90,000
Mobile Gas Service Corp.	206,000
Montana Dakota Utilities	97,500
New Jersey Natural Gas Co.	200,000
Northern Ind. Public Serv.	650,500
Northwestern Public Serv.	62,300
Ohio Gas Co.	8,960
Oklahoma Natural Gas Co.	1,151,500
Peoples Gas Light & Coke	914,000
Philadelphia Gas Works	1,150,000
So. Carolina Electric & Gas	50,000
South Jersey Gas Co.	25,000
SoCal Gas Co.	1,124,900
SoCounties Gas Co.	40,000
Southern Ind. Gas & Elec.	10,000
Union Gas System Inc.	5,180
Union Light, Heat & Power	2,000
Wisconsin Michigan Power Co	37,000
Wisconsin Public Service	14,000
Total	**$8,868,781**

NEW CITIES AND AREAS TO BE SERVED

Company	Areas
Arkansas Western Gas	West Fork and Centerton, Ark.
Central Electric & Gas Co.	Two towns in South Dakota.
Central Hudson Gas & Electric Corp.	Stewart Field ond Housing Development in Poughkeepsie, N. Y.
Cincinnati Gas & Electric	Harrison, Ohio.
Montana-Dakota Utilities	Four towns in North Dakota. Six towns in Montana.
Oklahoma Natural Gas Co.	Grand River, Okla., industries. Ardmore air base.
Kansas-Nebraska Natural Gas Co.	O'Neil, Inman, Ewing, Clearwater, Plainview, Creighton, Pierce (city gate), Osmond, Wausa, Bloomfield, Randolph, Hartington, Coleridge, and Laurel, Nebraska.
West Ohio Gas Co.	Outlying towns near Lima, Ohio.

Panel at Forrest City Gas-A-Thon (l. to r.): Forrest City Mayor Jack Porter; William A. Green and R. P. Hill, MidSouth; KXJK Staff Announcer Larry Parker; MidSouth President Cloud; Operations Manager Ray A. Bautts; and E. D. Wilson and Ed Byerley, MidSouth district managers.

How much will my gas cost? asked Mrs. Clement Walker of Forrest City when she called in during the Gas-A-Thon.

To introduce eastern Arkansas to natural gas, MidSouth borrowed an idea from the politicians —

The "Gas-A-Thon"

BELIEVING that an informed public will become a group of happy and satisfied customers, the MidSouth Gas Co. of Arkansas recently used a novel approach to enter the homes of thousands of potential consumers in eastern Arkansas to tell the story of natural gas.

This "visit" with potential consumers was conducted in the form of a panel discussion over local radio stations, the listening public being invited to ask questions about natural gas service, installations, and appliances.

Territory opened

Territory covered by the panel discussions, headed by President C. E. Cloud of MidSouth, was opened up to natural gas about Feb. 1. An eager, but generally uninformed and wary public had been putting hundreds of questions daily to local managers, salesmen, and servicemen, so MidSouth decided to open the doors of its general offices to all comers.

On Sept. 18, 1952, MidSouth was granted a certificate of convenience and necessity by the Federal Power Commission for the construction of facilities designed to bring natural gas to 25 eastern Arkansas towns, which never before had enjoyed any type of gas service. Construction was started immediately on approximately one half of the towns, and during January and February of 1953, natural gas was made available.

Previous contacts and surveys of potential consumers indicated that while almost everyone expressed a desire to use natural gas, many wanted to wait and let "George" convert first to observe his comparative fuel costs. Many more were actually afraid of gas. The resultant prospect for a rapid build-up of consumers was very dim.

It has been truly said that in order to sell, one must first create desire.

MidSouth realized that it had to create desire for its product and before that desire could be created, the comparative costs must be presented and the comparative safety of gas fully explained. It was felt that a house-to-house campaign would be too slow.

Radio was obviously the answer to how to get into thousands of homes at one time; the trick was, How to make the prospective consumers listen?

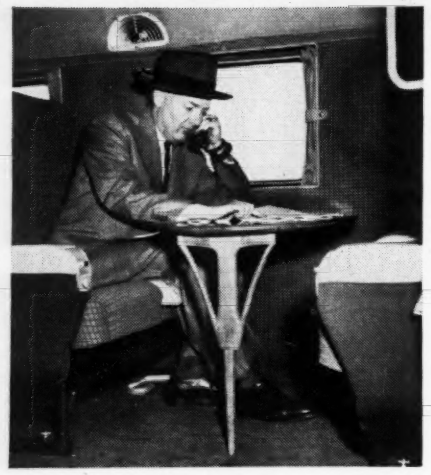
The listening trick, which MidSouth devised, was the "Gas-A-Thon."

The Gas-A-Thon, as the panel discussion was dubbed, was the climax of an all-around public relations program conducted in the eastern Arkansas communities which had just received natural gas service. Joining President Cloud on the panel were Executive Vice President William A. Green and other top company officials.

Revolutionary idea

The Gas-A-Thon, a sort of revolutionary public relations idea believed never before to have been attempted by a utility entering new territory, was styled somewhat along the lines of a statewide radio program used last summer by the successful Arkansas gubernatorial candidate.

The radio audience of potential natural gas consumers rose to the occasion, tele-



President W. F. Rockwell Jr. checks flying conditions and arrival times with the pilot on the plane's intercom-telephone. He also has a desk available for work while in flight.

Scattered plants linked by helicopter transportation

Helping Rockwell Manufacturing Co. solve its transportation problems between its main offices in Pittsburgh and seven plants in Pennsylvania and Ohio (within an approximate 200-mile radius) is a new seven-passenger S-55 Sikorsky helicopter, believed to be the first ever used for "corporate" travel.

The helicopter, with home base in Pittsburgh, has enabled President W. F. Rockwell Jr. and his associates to visit as many as three plants in a single working day since operations commenced the first of the year. The helicopter's daily schedules are determined on the basis of travel requests by officers and staff members who designate in advance their travel requirements.

On a typical day, it leaves the Pittsburgh plant with three to five members and possibly with an item of equipment needed immediately by a plant on the itinerary. First stop may be at Lestonia, Ohio, 60 miles away. Forty miles further on is the Barberton, Ohio, division, and approximately 90 miles beyond is the plant at Norwalk. On this particular trip, three two-hour stops are made and the company officials are still able to return the 191 miles to Pittsburgh the same evening.

Rockwell's helicopter makes possible a "taxi service" for executives and staff members. Here, the helicopter has just landed less than three minute's walk from Rockwell's Columbus, Ohio, plant.

phoning in scores of questions about natural gas.

On a completely unrehearsed panel, MidSouth officials answered questions like "Who owns the MidSouth Gas Company?," "What will happen to our supply if the government declares an emergency and takes over large pipelines?," "How long is the nation's supply of natural gas expected to last?," "Why is my rate higher than that in a town only 20 miles away?," and scores of others.

The first Gas-A-Thon was held on station KDRS, Paragould, the night of Feb. 12. While it was originally scheduled as an hour-and-a-half program, an extra 30 minutes of time was purchased when it became apparent that the public had more questions to ask.

During the two-hour session over KDRS, emceed by station President Ted Rand, a veteran Arkansas radio man, the panel answered nearly a question a minute. The questions were typed and passed to the panel by station employees posted at three telephones.

The program was such an unqualified success that exactly a month later, March 12, MidSouth spread out with a two-station hookup originating in the studios of KXJK, Forrest City, and carried also by KFFA, Helena. Whereas the Paragould feature was a night program, the company's second Gas-A-Thon was held from 10:15 a.m. to 12 noon to avoid being blanketed by powerful TV, only 30 airline miles away, at Memphis.

Six-town response

Here, too, the Gas-A-Thon was a success. Housewives in six eastern Arkansas towns responded, as did many businessmen in the stations' coverage area, particularly in Forrest City and Helena. Again, nearly a question a minute was answered thoroughly by the panel in the hour and 45 minutes.

A dangerous undertaking—asking for trouble? Even a segment of the gas-consuming public thought so.

The Gas-A-Thon won a resounding victory in public relations. It had tremendous public appeal in that it opened the doors of the offices of the highest officials in the company. How often does the average consumer have a chance to ask a question of the president of his utility?

With Mr. Cloud and Mr. Green on the panel were Sales Manager R. P. Hill, Operations Manager Ray A. Bautts and William Cobb, manager of rates and engineering from the general office. At Paragould the panel was supplemented by District Manager R. C. Sumners, Local Manager Ike Wilcockson, J. T. Brown, manager of the Chamber of Commerce, and Mayor Charlie Wood. At Forrest City were district managers, E. D. Wilson and Ed Byerley and Mayor Jack Porter of Forrest City.

The answers were direct and straightforward. There was no stalling. There was a number of "I don't know, but I'll find out and tell you" answers. Before the end of each program, every answer was given. On specific questions involving individual problems, potential consumers were invited to call their respective MidSouth offices and get the answers.

The Paragould Gas-A-Thon proved to be an ideal initiation for the second program over the two-station hookup. Whereas questions in the Paragould area came from only one town, the Forrest City-Helena hookup drew questions from Forrest City, West Helena, Brinkley, Wynne, Cotton Plant, and Marianna.

Tough questions

With Larry Parker, KXJK staff announcer, as master of ceremonies, the panel breezed through a tough set of questions, in most instances similar to those of the first program. Questions of comparative fuel costs enabled panel members to tell how much more economical natural gas is than electricity, fuel oil, coal and L.P. gas for heating, water heating, cooking, and refrigeration. Too, the safety features of natural gas were presented time and time again.

A full-fledged buildup was carried out in both Gas-A-Thon areas. Preceding the Paragould panel, newspaper ads were carried for three days in the town's two dailies and five spot announcements were carried on KDRS.

Helena and Forrest City dailies carried three ads each, while the two stations put on five spots each day until Gas-A-Thon time. Colorful handbills were distributed in Wynne, Brinkley, Cotton Plant, and Marianna, which do not have daily papers. The response was gratifying.

To the company the results were entirely satisfactory. The public took the programs as acts of good faith. Certainly there is no way of measuring or comparing results had the company not held its Gas-A-Thons, but evidence of interest was manifested by the influx of customers at all offices in the two areas. The company believes that the programs gave its sales of service a needed lift and established natural gas in community progress.

Brighton aftermath

Rochester Gas did a magnificent job in handling claims arising from the 1951 tragedy

By **RAYMOND W. WHITE** • Pacific Gas & Electric Co., San Francisco

WHEN a gas utility is involved in a gas explosion or gas fire where there is substantial property damage or where there is serious personal injury, considerable notoriety and publicity automatically follow such incidents and generally this notoriety and publicity is adverse to the utility's best interest and particularly to the relations it should enjoy with the public it serves.

Close coordination between management, claims, publicity, operating, and other departments is essential to minimize this potentially adverse effect and to protect the company's financial status.

Liability: deny or accept?

Should the facts indicate the necessity for denying all liability, reasons for this position should be developed and the claimants and public acquainted with them as soon as possible so as to preclude the forming of adverse reaction because of apparent indecision. All the consequences of such action and particularly the adverse effect of subsequent litigation, if there is a reasonable chance it should prove unsuccessful, must be carefully weighed.

In many cases the recognition of liability in the first few hours or days after a serious explosion or fire will prevent or reduce litigation and enable final settlement for much less than if the decision is delayed. However, even more important to the utility is the confidence and esteem of its customers which such a prompt and fair policy fosters.

An excellent example is the case of the Rochester (N. Y.) Gas & Electric Corp. and its handling of such an incident.

The city of Rochester and its suburbs house in the neighborhood of one-half million persons. It is in northern New York state and fronts on Lake Ontario and is a typical large metropolitan region with well-to-do residents in the Brighton area. Brighton, a separate township in the suburbs of Rochester, has a population of approximately 18,000 persons. Rochester Gas has approximately 2500 employees and serves about 170,000 electric customers and about 135,000 gas customers.

At 1:20 p.m. on Friday, Sept. 21, 1951, Brighton was shaken by a series of explosions and fires which within one and a half hours destroyed 19 homes, badly damaged 25 others and caused minor damage to many other dwellings. Two children were killed. One elderly woman died of a heart attack while hurriedly leaving her place of residence, and 30 others were reported injured. Think of the catastrophe which could have occurred had this explosion happened at nightime when most of the residents were home!

Fair, prompt handling

By all standards it was a tragic ocrence, but one which could confront any of us in the industry. The example set by Rochester Gas & Electric by its conduct after the disaster demonstrates how effective the fair and prompt handling of claims and the quick and efficient handling of publicity or news statements can be. The task which confronted the Rochester company was a monumental one. Many people had to be temporarily housed, services had to be inspected and returned to use, investigation of the explosion had to be made, a statement given to the public, and the hundreds of individual claims had to be investigated and settled.

Fortunately, the company had maintained good public relations in its area for many years, so that it had a receptive populace when it decided to accept its full responsibility for the incident, to assist in rehabilitating the survivors of the catastrophe, and to make restitution to the injured persons and owners of the damaged property. The statement of its responsibility was accepted at once and without reservation.

One of the company's first acts was to

Raymond W. White

While in Rochester last fall, Mr. White, who is manager of PG&E's claims and safety department, met with the company and went over the Brighton matter in considerable detail with them and subsequently received Rochester's permission to discuss the case. This article is part of a paper he presented at the claims and accident prevention conference of PCGA in Fresno, Cal., Mar. 19.

Other phases of the accident have been covered in past issues of *GAS*. (See March 1952 issue, pp. 37-39.) The National Board of Fire Underwriters and the New York Fire Insurance Policy Rating Organization have issued a bulletin, "The Brighton Gas, Fire and Explosion Catastrophe," which gives a detailed technical discussion of the cause and the action to prevent a recurrence.

inform the public by means of paid advertisements that the company would "meet its full responsibility in the situation," and would do everything possible to help those who had suffered damage. The ad volunteered on behalf of the company to find temporary housing for those who were unable to provide it for themselves, described how and when service would be restored, gave instructions not to turn on the gas appliances in the homes until the company's employees first checked them so as to prevent explosions when service was restored, told of the steps being taken by the corporation to assure safety in the future, and expressed the sympathy of the company for the deceased, the injured persons, and the residents of the area involved in the catastrophe. About 30 industrial and commercial employees with engineering backgrounds were sent from house to house the next day or two following the explosion to express the company's sympathy and to assist those involved in preparing claims against their own insurance companies and to advise them that Rochester Gas would stand fully behind its obligations as soon as they could be determined. In other words, they offered their services to assist in overcoming the first shock of the persons involved and in starting their rehabilitation. In addition to this and the newspaper advertisements, time was taken on the local radio stations where similar information was broadcast.

Speedy settlement

After hurried conferences of the management with the claims and legal representatives of the company, they decided that the case was one they could not profitably defend in court either legally or morally and that it would be greatly to their advantage to continue informing the public that they would meet their full responsibility. They agreed to actively solicit claims and endeavor to dispose of them as rapidly as possible. They decided to advance money to claimants as loans prior to settlement of claims and to otherwise assist in rehabilitating those involved.

Within 48 hours after the accident, the company had convinced its insurance carrier of the probable liability in the case and had been given authority by the carrier to make all necessary settlements, subject to conferring with the carrier from time to time on certain specific cases and problems. It is interesting to note that the insurance was an excess coverage type with Rochester having a deductible, or in other words being liable or self-insured, for the first $10,000 of personal injury claims and the first $20,000 of property damage claims, or a total deductible of $30,000. All in excess of that amount was the responsibility of the excess insurance carrier. After having convinced the insurance carrier that the best thing for both the utility company and the insurance carrier was to endeavor to make fair and prompt settlement of the claims rather than risk litigation, the claims representatives and the legal representatives of the utility called meetings with all the fire and property insurance carriers in town (approximately 100), advising them that the company knew there would be subrogation claims on the fire and property damage insurance coverage of the homes in question and asked for their assistance in settling the cases and preventing litigation. In return they promised fair settlement and fair treatment of all the claims. This cooperation was given by the insurance companies and likewise similar arrangements were made with the attorneys in Rochester who were consulted by claimants in connection with claims arising out of the explosion.

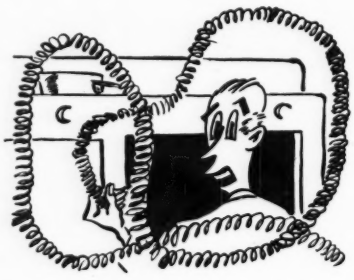
As of March 13, 1953, the Rochester Gas and Electric Corp. had received approximately 775 claims arising out of this incident and had settled all but 45 of them. This balance of 45 claims is composed of three personal injury, two direct property damage, and 40 indirect or subrogated property damage claims by insurance companies. It is estimated that the total cost of settlements will be approximately $1.6 million with the 45 unsettled cases representing about $40,000 of said sum. A large part of the loss was occasioned by the fires which followed the explosion. Had these fires been controlled earlier, the losses might have been much less.

Not a single suit!

Not one suit has been filed against Rochester arising out of this incident. The facts of the case were such that all of the attorneys who were consulted both by the utility company and the insurance carrier were of the opinion that the case was one wherein the chances of successfully defending law suits were extremely slim. The prompt notification to the public expressing sympathy by the company and offering assistance for the bereaved and homeless customers, and the other prompt, courteous, and efficient action taken by the management and by the claims and legal representatives as well as by their operating and commercial personnel turned what could have been public wrath against the company into public commendation of the company's fair and square meeting of what was a catastrophe not only for the populace but for the company as well. Many, many letters were received by the management complimenting the company and its representatives for their handling of the situation. Public officials were high in their praise of the company's attitude.

This is in my opinion an outstanding example of intelligent management action and efficient follow up by claims and legal personnel, by operating and commercial representatives, and by advertising and publicity personnel working together as a team.

What would you do?



• *Customer has purchased a new spring for the gas range oven door. Requests serviceman to install the spring.*

4 companies would refer customer to a dealer.

3 companies would render service and charge the customer.

2 companies would refer customer to a dealer. If customer were unable to get one, company would render service and charge the customer.

1 company would comply if the job could be done in 15 minutes or less. If the job took longer, would charge the customer for labor.

The service policy rule book doesn't always give the answer to whether, when, or how unusual service requests should be handled by utilities. The 10 companies who provide their own answers here are PCGA member utilities; the problem was one of 35 posed by H. E. Benninghoven, San Diego Gas & Electric, in a survey reported at the PCGA customer service conference, Fresno, Calif., March 18.

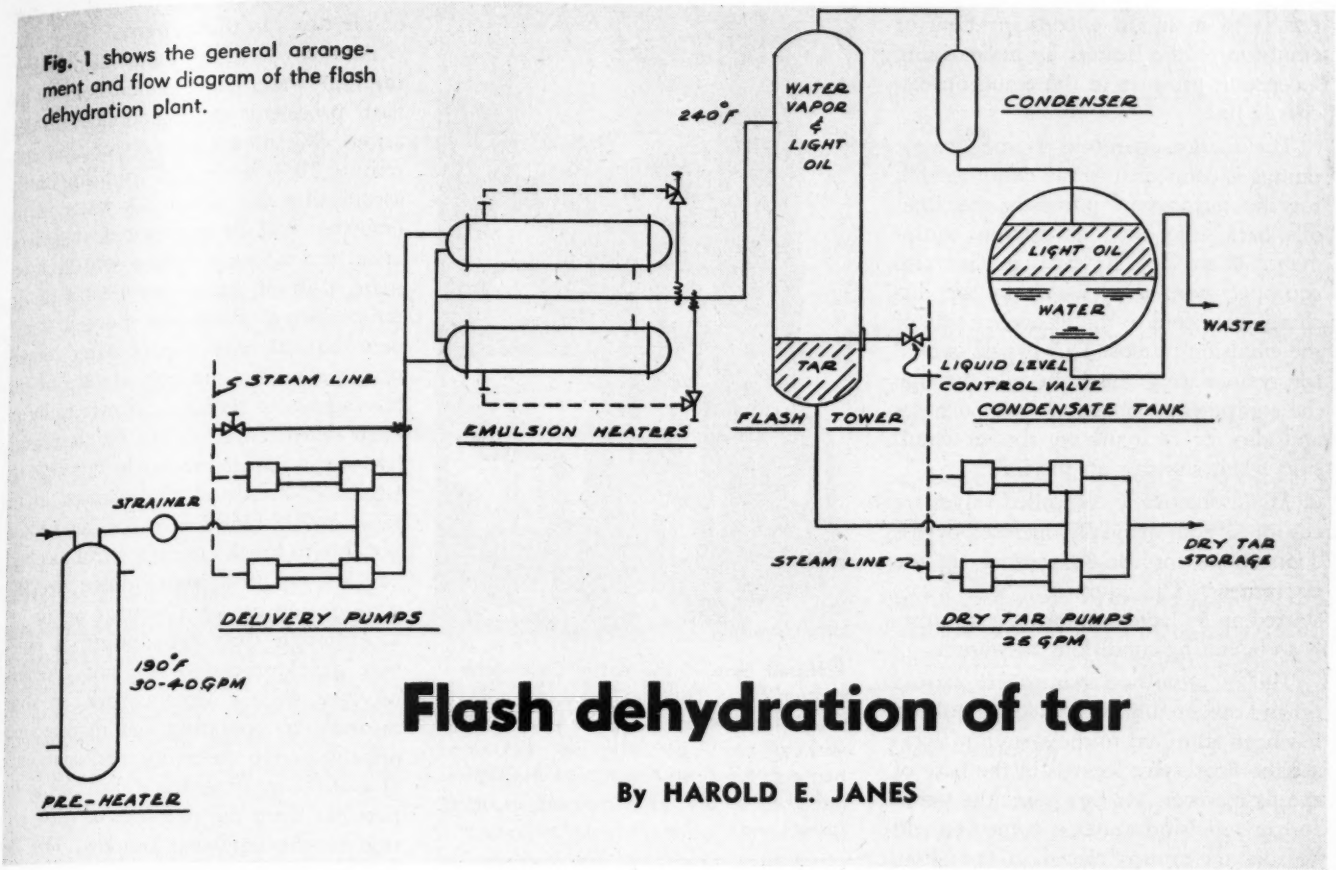


Fig. 1 shows the general arrangement and flow diagram of the flash dehydration plant.

Flash dehydration of tar

By HAROLD E. JANES

FOR the past decade there has been continued expansion and a steady growth of population in the area served by the Peoples Water & Gas Co.* By the winter of 1949-1950 this trend had progressed to the point where production facilities were sorely taxed to meet the demand during peak load periods. To alleviate this condition and to provide facilities to meet this demand for ever-increasing gas volumes, company management reached the decision to convert existing carburetted water gas apparatus to the production of high Btu oil gas.

While engaged in the production of carburetted water gas, tar dehydration was accomplished by the batch process using two 30,000-gal. non-pressure tanks equipped with steam coils. Since these units would obviously be inadequate for the purpose, the conversion program included the purchase and installation of a flash dehydration unit to process the substantially increased volumes of by-product tar to be expected from oil gas production.

The general arrangement and flow diagram of the apparatus is roughly illustrated by the sketch in *Fig. 1*. The original equipment consisted of the following: two steam-driven reciprocating tar emulsion pumps rated at 30- to 40-gpm capacity; temperature control valve in the steam supply line with the control element located in the discharge from the emulsion heaters; two insulated shell-and-tube tar emulsion heaters, each sized to heat 40 gpm of emulsion from 190° F to 240° F; pressure control valve governing steam admission to the emulsion pumps; one 40-in. OD by 25 ft high flash tower equipped with a series of baffles and lagged with approximately 6 in. of weatherproof insulation; two steam-driven reciprocating dry tar pumps rated at 25-gpm capacity; one shell-and-tube condenser, and one collecting and decanting tank. Due to the presence of accumulated solids in the relief holder tank used for emulsion storage, the above equipment was augmented by the installation of a duplex strainer in the suction manifold of the emulsion pumps to minimize the possibility of erosion as well as stoppage in the tubes of emulsion heaters.

Tar dehydration by the flash process using the above equipment is effected by pumping a preheated tar emulsion (190° F) through the shell-and-tube tar emulsion heaters, which are designed to further heat the emulsion to about 240° F. The tar emulsion is then discharged from the emulsion heaters into the flash tower where the tar constituent of the emulsion falls to the base of the tower while the water and light oils which are in a vapor phase pass out through the top of the tower and thence to the water-cooled condenser where they are condensed and carried into the collecting and decanting tank which separates the water and oil. This tank is equipped with an arrangement for the continuous discharge of waste water, and the condensed light oils are recovered either for blending with the dry tar or for sale as such.

The dry tar is pumped from the base of the flash tower by means of the dry tar pumps, the pumping speed of which is controlled by a liquid level control located in the base of the flash tower.

The emulsion heaters are heated by high pressure steam fed through a temperature-operated steam valve located in the steam supply line, the temperature element of which is located in the emulsion line entering the flash tower. This arrangement provides for the automatic increase or decrease of process steam in accordance with the emulsion temperature conditions on the discharge side of the heaters as well as the degree of heat transfer being effected in the heaters.

The tar emulsion pumps are controlled by a ½-in. pressure governor installed in the steam line to the pumps. The pressure tap from the governor diaphragm is located in the emulsion pump dis-

*North Miami Beach, Fla.

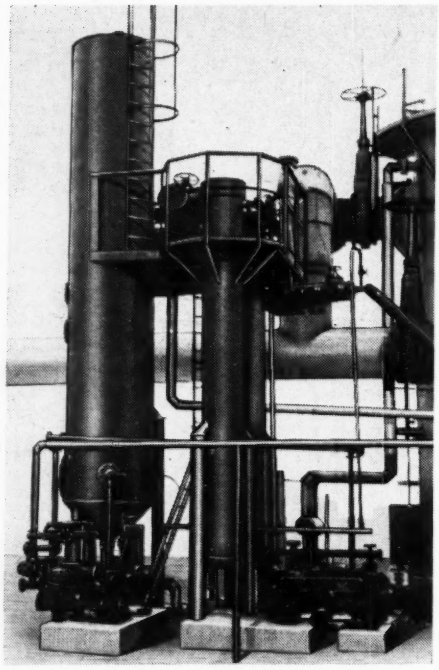
charge line. The purpose of this governor is to maintain a constant flow of emulsion to the heaters by maintaining a constant pressure in the emulsion discharge line.

The suction manifold of the dry tar pumps is connected to the decanter tank for the purpose of pumping the light oils back into the dehydration equipment. These dry tar pumps are also equipped with a bypass from the discharge manifold to the secondary side of the emulsion pumps. This bypass is used for recirculating the light oils through the equipment for flushing-out purposes and also for recirculating the tar emulsion when starting up the unit.

All automatically controlled valves are equipped with manually operated bypass connections for use in starting up the equipment. The equipment is always started up by hand and brought up slowly to operating conditions as follows:

The tar emulsion pumps are started up and operated until sufficient emulsion has been admitted to the system to actuate the float valve located in the base of the flash tower. At this point the steam for the emulsion heater is turned on and the dry tar pumps placed in operation. By means of the bypass arrangement described above, the emulsion is recirculated through the equipment until dehydration is taking place as evidenced by the appearance of steam and light oil condensate. When the volume of condensate appears to diminish, the emulsion bypass valve is closed, the dry tar pump discharge valve is opened to dry tar storage, and the tar emulsion pump is placed in operation. Automatic controls are now brought into play and adjusted until the rate of flow through the unit results in a vapor temperature at the top of the flash tower of approximately 210° to 215° F and a temperature of about 240° F in the emulsion entering the tower. The unit should now be operating under normal control conditions and any further adjustments will be governed by the water content of snap samples taken periodically at the base of the flash tower.

The flash dehydration unit described herein was designed to deliver 20,000 gal. of dry tar per day with a water content of 2% or less when operated on a basis of 24 hours per day and in conformity with design conditions. To insure the attainment of designed capacities the following considerations are important: (1) the emulsion entering the heater should be at or near 190° F; (2) the live steam supplied to the emulsion heater should be maintained at a pressure of 150 psi, and (3) the water content of the emulsion being processed should not exceed 50%. Obviously, any appreciable deviation from these designed conditions would necessarily result in reduced capacity. However, some variation is possible since the unit was engineered to deliver the above capacities using only one emulsion heater and the unbalance caused by the departure from one or more of the above conditions can, to a large extent, be offset by cutting in the second heater and operating the two heaters in parallel.



Pictured here is the entire flash dehydration unit: The two emulsion pumps are in right foreground; the two smaller vertical units are the tar emulsion heaters; the flash tower is at the right; and the two dry tar pumps are in right foreground.

It has been found possible with our unit to dehydrate as high as 16,000 gal. of dry tar per day although the temperature of the emulsion entering the heaters was as low as 130° to 135° F. To eliminate this problem we are installing a preheater in the emulsion line coming to the equipment and, upon completion, expect to exceed the designed capacities without difficulty.

To illustrate the efficiency and flexibility of the unit, it is worthy of note that emulsion containing as high as 75% water has been effectively dehydrated in a single operation. This practice is not recommended when emulsions containing appreciable solids are being handled, since the reduced rates of flow necessary to effect complete dehydration can result in their deposition and possible stoppage of the tubes in the heaters.

Another deterring factor in dehydrating high water content emulsions by the flash process is the economic consideration. When processing emulsion containing 50% water and operating on the assumption that all of the water in the emulsion will be evaporated, the theoretical steam consumption will approximate 1 lb of steam per pound of dry tar produced. From the above it is evident that the reduction of water content of the emulsion through the use of surface agents or settling can materially reduce dehydration costs by decreasing live steam requirements. In our case the emulsion is treated while stored in the relief holder tank and it has been found possible to break emulsions from as high as 75% to 80% water down to 20% through the use of a wetting agent.

Although flash dehydration is not a new development, it has not generally received wide acceptance due, in some measure, to operating and maintenance difficulties encountered in earlier models. One of the more serious difficulties in the past has been the problem of tube erosion in the emulsion heaters. The designers of our equipment have minimized, if not eliminated, this problem by incorporating design features into the heaters which control the high velocities caused by the conversion of water to steam at this point.

In addition to the improved design of recent models there are certain other advantages to be found with this type unit, among which are the following:

1. Low ground space requirement. The entire unit described herein occupies a space approximately 20 ft sq.

2. Automatic control. Under normal conditions the unit requires a minimum of attention beyond a periodic check of operating conditions, changing strainers, etc., and can usually be handled by regularly scheduled shift personnel in most plants.

3. Continuous operation. The unit is designed to operate 24 hours a day and, in one operation, take emulsion stock, dehydrate and pump to dry tar storage or directly to tank cars for shipment, thus eliminating the delays to multiple handling which accompany other methods of dehydration.

4. Flexibility. By variations in flow rates and operating conditions, a tar product of any desired water content and characteristics may be produced. This is a distinct advantage in those plants where tar is processed for several different uses such as boiler fuel, sale purposes, etc.

Acknowledgement

The writer wishes to express appreciation for the use of illustrations and technical data in this article, made possible through the courtesy of The Gas Machinery Co.

Things are quieter along the Potomac

Gas will be in the picture, but fewer fights are in store as reins of government shift to Capitol Hill after 20 years of bureaucratic control

By **LARSTON D. FARRAR** • Washington Correspondent

THE first four months of a new national political administration give good reason for a close new look at the Washington scene, for all segments of the natural gas industry already are feeling the effects of the changes and, undoubtedly, are anticipating some of the pleasures of living in a different business atmosphere in the future.

All the major changes—or, at least, the surface changes—have been publicized on newspaper front pages. More significant, if little-publicized, changes are taking place in the bureaus, in the regulatory agencies, and on Capitol Hill.

A new formula for progress more in line with the traditional American constitutional principles seems to be evolving, slowly but surely, and it will bring in its wake new challenges to the natural gas industry, and, no doubt, new opportunities. It seems evident, even this early in the new administration, that the really significant, underlying changes are being dictated by Congress and that the administrators are going to go along, whether or not they like the idea of having Capitol Hill dictate their policies.

Decontrol, for example

A good example of how Congress has called the tune so far may be seen in the de-control activity that has taken place so far. For some weeks after he took office, the President and his advisers, most of them adherents of the Thomas E. Dewey school of thought, were undecided about whether or not to keep controls on, and, if so, about asking for new controls for the forthcoming fiscal year.

The chairmen of the House and Senate Committees on Banking and Currency, after consulting with their Republican colleagues, on two separate occasions let it be known publicly that no controls legislation possibly would get to first base in their committees. As a result, the President decided to take credit for being a decontroller, not let it all go to Congress. The remainder is history.

Price controls now are off virtually all the products manufactured for the gas industry, and will be dead beyond doubt on June 30.

Wage controls, salary controls, and other such, also are off the gas—and all—industry.

Trimming PAD

The Petroleum Administration for Defense, which in its heyday in June 1952, had 360 employees, already is down to 250 employees, and the remainder are looking for work elsewhere. The agency is accepting forms for third-quarter pipe and oil and gas country tubular goods, but its officials say frankly they are not processing these forms since they are convinced they will surely be out of business on June 30.

It is strongly believed—although no announcement, official or otherwise can be obtained—that the remnants of PAD, which would include perhaps a few employees to help work out a system of priorities for Atomic Energy Commission and military agencies, will be transferred on June 30, or before, to the Oil and Gas Branch of the Department of the Interior.

There will be subtle changes, less far-reaching in their ultimate effects, in the Oil and Gas Branch of Interior, in the Interstate Commerce Commission, and in the Federal Power Commission in the coming days. These will include at least one new member to the Federal Power Commission, to succeed Thomas C. Buchanan, and new faces on that agency as the terms of other members expire.

Tightening up

Principal changes to be made in ICC, FPC, and the Interior Department will be a "tightening up" on personnel, and a new emphasis on helping business to solve its problems, rather than hamstringing legitimate business.

It is on Capitol Hill that the really significant changes have taken place and where the natural gas industry, in all its phases, will be looking for a new kind of deal.

The shift to Republican control has placed in positions of power—as chairmen of committees or subcommittees—old-line Republicans who, for the most part although not invariably, are strongly against the centralization of power in Washington that has characterized the trend in recent years.

The power once more is lodged in a group of men who dominate the legislative branch by virtue both of their tenure in office and of their legislative know-how.

Change for the better

The new chairman of the House Committee on Interstate and Foreign Commerce is a frail, studious, deliberate man in his mid-'70s—Charles A. Wolverton, who has been in Congress, representing the first Congressional District, since 1927. He has taken the place of Rep. Robert Crosser (D.-O.), an ill, elderly man who has been in Congress for many years by virtue of a large and loyal labor-

following in Cleveland, whose interests he has served well.

Although Mr. Crosser has been accustomed for years to "sitting" on legislation sponsored by the oil and gas people, or, for that matter, almost any legislation introduced by Republicans, Representative Wolverton is not likely to suffer with this ailment. Mr. Wolverton moves slowly, but he does move, and generally it is in the interests of the public good.

Educating members

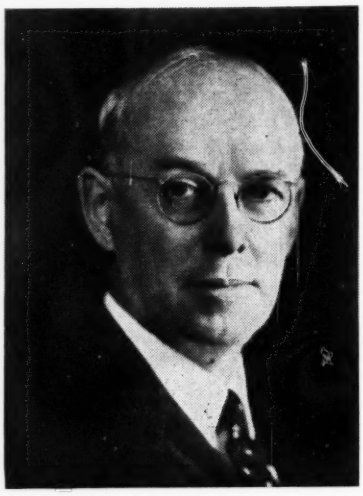
So far, he has spent his time as chairman of the House Interstate and Foreign Commerce Committee in hearing the officials of the various regulatory agencies explain their functions and the lines of their authority. Although Mr. Wolverton has heard these stories often and no doubt can correct the agency heads in any mistake, he feels that the time spent is for a worthwhile purpose.

"We have to educate the new members of the committee—Democrats and Republicans," he said recently. "Many of them are not aware of the scope of our committee, or of the responsibilities of the executive and regulatory agencies for whom we legislate."

Headline hunter

The Interstate and Foreign Commerce Committee of the Senate is now headed by Sen. Charles W. Tobey (R.-N. H.), whose views ought not to be a secret to any person who reads the newspapers regularly. Senator Tobey is more interested in such matters as crime in interstate commerce and waterfront racketeering than he is in pushing economic legislation that may be of help to business and the people. If there is a headline involved, however, Senator Tobey can be depended upon to take a vital interest in almost any subject. His most notable victory in this particular endeavor has been pressuring the Department of Justice to get indictments against officials of the Baltimore & Ohio Railroad for allegedly obtaining a loan many years ago from the Reconstruction Finance Corporation by means of misstatements of fact in a financial net worth sheet. This has little bearing on the rates people may pay for railroad service, or the type of service those who use the B. & O. may obtain, but a conviction would represent a great victory for the public interest in Senator Tobey's eyes.

The House and Senate Committees on Interstate Commerce are very important



Sen. Charles W. Tobey is not likely to prove of much help to the gas industry in his role as chairman of the Interstate and Foreign Commerce Subcommittee.

committees, not only to the natural gas industry, but to all utilities. A study of the bills considered by these committees runs the gamut from aviation to radio and TV legislation. Specifically, the committees are likely to consider, either late in this session or early next year, the Bow Bill (H. R. 2679), which would set aside the Supreme Court decision in the East Ohio case; the Heselton bill (H. R. 134) to authorize the Federal Power Commission to prescribe safety requirements for natural gas companies, and the Lyle Bill (H. R. 2120), which is very similar to the old Kerr Bill, which was vetoed by President Harry Truman.

Industry to be heard

This is not a prediction that these three pieces of legislation will be passed this year or next year, but it seems very likely that they will be considered by the House Committee and hearings held. Mr. Wolverton has said that he hopes, after hearing all the heads of the various agencies over which his committee has supervision, to have testimony from various representatives of industry groups, such as the National Assn. of Railroad and Utilities Commissioners, the American Gas Assn., etc., as to the legislation they feel is essential for the public interest. After that, if time is left in this session, there will be hearings on specific legislation.

Senator Tobey does not seem to have plans for any hearings in the immediate future. It seems extremely unlikely that anything closely resembling the Bow Bill or the Kerr Bill would get Senator Tobey excited enough to call hearings this year.

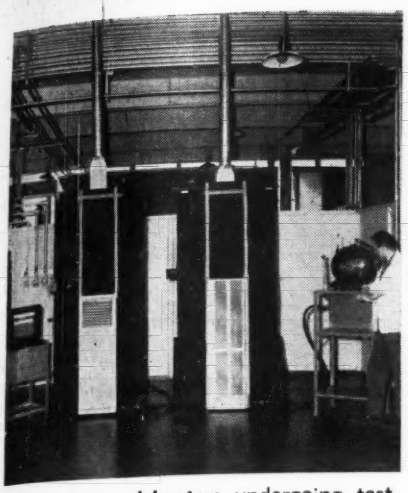
The natural gas industry can take heart from one little-noticed, but significant, change that has taken place in the Senate Committee on Interior and Insular Affairs, of which Sen. Hugh Butler (R.-Nebr.) is chairman, succeeding Sen. Joseph C. O'Mahoney (D.-Wyo.), who lost out in the elections last November.

Senator Butler has appointed Sen. George Malone (R.-Nev.) to be head of the Minerals and Fuels Subcommittee. Senate Resolution No. 45 has been adopted, continuing for another year the study of fuel reserves, but Senator Malone says unequivocally that he does not intend following the tack taken by Senator O'Mahoney. The attorney and clerks who were making the study of the fuel reserves for the Democrats were let out, effective Feb. 1, and Senator Malone says that only one minerals expert will be used, without any special assistants, and that there will be no hint of forming a national fuels policy that might be favorable to coal, or any other single interest.

Malone's aims

"My desire simply is to keep up to date a set of statistics showing the true picture of the mineral and fuel resources of the nation, with particular reference to defense needs," Senator Malone told this reporter. "We are not interested in the least in the type of 'conservation' that prevents our natural resources from being used, for only by economically using such resources do we furnish industry an incentive to explore and to find other reserves."

All in all, the natural gas industry can believe, as many in and out of the industry feel, that there will be fewer sources of friction between the industry and the federal government in the coming months than at any time in many years. How the nation generally will feel about this change in the coming elections will depend, to a large extent, on how businessmen, including those in all phases of the natural gas industry, respond to the challenges inherent in the greater freedom of action that will be apparent. If the natural gas industry continues its policies of public service for the public good, as in the past, it is probable that the citizen will find that he, too, likes a new climate of freedom better than the former atmosphere of continual federal encroachment, accompanied by constant headlines battles, charges and counter-charges.



Vented recessed heaters undergoing test in the new test wall structure. The lines on the face of the test board and sticking out the sides are thermocouple wires used to measure the temperatures developed during operation.

AGA testing methods revised for vented recessed heaters

By **HOWARD L. McPHERSON** • AGA Laboratories, Cleveland

TO keep pace with the rapid development in the design of vented recessed gas heaters, the approval requirements committee of the American Gas Assn. has adopted a number of major revisions to its approval standard for such units that will affect test wall structure, type of flue marking, and flue gas temperatures. These revisions will become effective Jan. 1, 1954, and will be applied to all vented recessed heaters tested by the AGA Laboratories after that date.

A vented recessed gas heater is designed for installation in a wall or stud space in a dwelling and is normally enclosed in combustible construction. The draft hood is normally required to be within the appliance and may take heated air for draft hood dilution. The venting system for the unit is usually enclosed within the wall of the building. While wall-type heaters have been available for a number of years, the popularity of this type of recessed heater has been rapidly increasing in the western states as a source of heat in basementless homes.

Recognizing the problems encountered with the development of newer types of gas equipment, the approval requirements committee a few years ago authorized the responsible subcommittee to conduct an extensive investigation of contemporary recessed heaters and to revise existing approval requirements, where necessary, to improve performance. Although approval requirements currently exist for recessed heaters, the testing procedures have been revised in line with the findings of the investigation. Many of these revisions are believed to be of major interest to the installer, the gas utility, and to the regulatory authority since they provide a valuable background as to the proper installation of the equipment in the field.

Revised test wall structure

Major revision to the performance standard has been made in the basic test wall structure employed. It is to be constructed in keeping with commonly accepted building construction. Since recessed heaters are designed for installation in a wall or stud space of a room and are normally enclosed in combustible construction, the appliance is to be tested as a unit when installed in a simulated wall extended from floor level to a standard ceiling height of 8 ft. Thus, with this test assembly, a part of the vent system is subjected to test. Use of the test structure will include a section of the vent system and will provide a means of measuring temperatures developed on surfaces above the unit. This is expected to eliminate many field service complaints by the user arising from the observance of hot walls.

The full 8 ft of height for test purposes may be obtained by the appliance manufacturer, either by his own design or by specifying the use of a listed wall vent suitable for the service requirements. When the extension is of the manufacturer's own design, the extension is considered an integral portion of the appliance and must be furnished by the manufacturer and installed with the unit in the field.

Application of unit to test wall

The frame of the test wall section, shown by *Fig. 1,* is enclosed on both sides with 1-in. dressed soft wood boards or ¾-in. plywood panels. Both sides of

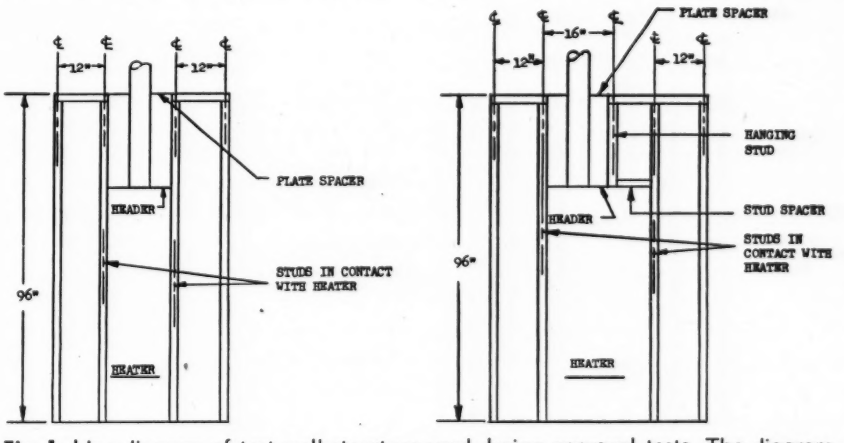


Fig. 1. Line diagram of test wall structure used during approval tests. The diagram at left is for installations between nominal 16-in. OC studs or less; diagram at right, 16-in. stud spaces.

SUMMARY OF CONTEST EXPERIENCE

Divisions	Dec. Freq. Rate	% Change from Nov.	Jan.-Dec. Freq. Rate	% Change Jan.-Dec. 1951
All Divisions	7.32	+21%	8.53	−7%
Combination Gas and Electric	7.19	+11%	7.79	+1%
Gas	9.08	+115%	10.77	−16%
Electric	6.73	+8%	8.24	−9%

18 utilities set perfect safety marks

Out of the 209 companies competing in the public utilities section of the 1952 safety contest conducted by the National Safety Council, 18 finished up with perfect records. In 1951, out of 200 competing companies, 16 had perfect records.

Contestants in the three divisions—gas, electric, and combination—worked a total of 627,811,000 manhours, a 3% increase over the 1951 figures. Injuries during the period totaled 5354, a 4% decrease compared with the previous year and a 7% decrease in the final rate compared with 1951. The table shows a comparison of the December-November frequency rate and the January-December rates for the two years.

Winner in the gas division's Group A with a 1.03 12-month rate of lost manhours was the Columbus (Ohio) Group of the Columbia Gas System Inc. Following in second and third place in Group A were East Ohio Gas Co., Cleveland, with a rating of 1.69 and Hope Natural Gas Co., Clarksburg, W. Va., with 2.11.

Group B winners were Michigan-Wisconsin Pipe Line Co., Detroit, 2.88, first; Atlanta (Ga.) Gas Light Co., 2.90, second; and Equitable Gas Co., Pittsburgh, third with 3.75. In Group C United Gas, Louisiana-Mississippi District, placed first with a rating of 6.33; Malden-Melrose Gas Co., Malden, Mass., was second with 8.75, and Seattle (Wash.) Gas Co. was third with 10.25.

Five Group D companies ended up with no lost manhours due to accidents. They are the Water & Gas Dept. of Duluth, Minn., Salem (Mass.) Gas Light Co., Lynchburg (Va.) Gas Co., Northampton (Mass.) Gas Light Co., and the Wachusett Gas Co., Leominster, Mass.

Combination gas-electric division winners:

Group A: Florida Power & Light Co., Miami, 2.65; Cincinnati Gas & Electric, 3.18; Consolidated Gas Electric Light & Power Co., Baltimore, 3.66.

Group B: Central Illinois Light Co., Peoria, 1.05; Wisconsin Public Service, Milwaukee, 1.08; Wisconsin Power & Light Co., Madison, 1.66.

Group C: Wisconsin Michigan Power Co., Appleton, Wis., 3.94; Central Vermont Public Service, Rutland, 7.70; Interstate Power Co., Dubuque, Iowa, 8.11.

Three companies in Group D also ended the period with perfect records. They are: Lake Superior District Power, Ashland, Wis.; Fitchburg (Mass.) Gas & Electric Light; and North Berkshire Gas Co., N. Adams, Mass.

Honorable mention certificates were awarded companies having the greatest continuous manhour exposure without a disabling injury during the period of the contest. Combination gas and electric winners in this category include: Group A, Virginia Electric & Power Co., Richmond, 1,088,608 injury-free manhours; Group B, Wisconsin Power & Light Co., Madison, 1,461,345; Group C, Interstate Power Co., Dubuque, 518,100; Group D, Green Mountain Power Corp., Montpelier, Vt., 664,544. Gas division winners: Group A, East Ohio Gas Co., 1,280,989; Group B, Equitable Gas Co., 637,754; Group C, Kentucky West Virginia Gas Co., 286,122; Group D, Consumers Gas Co., Reading Pa., 116,434.

the enclosing panels and the studding in contact with the heater are painted a dull black.

The portions of the heater normally located in the wall are framed on the top, bottom, and sides with wood of 2-in. nominal thickness. The studs on the sides extend to 8 ft, including the floor and ceiling plates. If the header adjacent to the flue outlet is furnished by the manufacturer as a part of the appliance. the header is used during tests. When no header is furnished, a wooden header is used so as to maintain proper clearance of the test flue. As previously stated, the test flue may be either a listed wall vent suitable for the service or a flue extension of the appliance manufacturer's own design.

The importance of proper installation of recessed heaters to secure optimum performance in the field cannot be overstressed. As acceptable clearances for installation of listed vents vary from ⅜ to ½ in., the approved heater is required to be marked as to the type of vent system to be used in the field in keeping with the vent system used during the approval tests. Many heaters may be labeled for use with listed Type BW gas flue or vent. When this designation is observed, it is an indication that any Type BW gas flue or vent which has been listed by a recognized testing agency can be used in accordance with the terms of its listing. An approved appliance specifying use of a Type BW gas vent will have been tested by the AGA Laboratories with a listed Type BW gas vent.

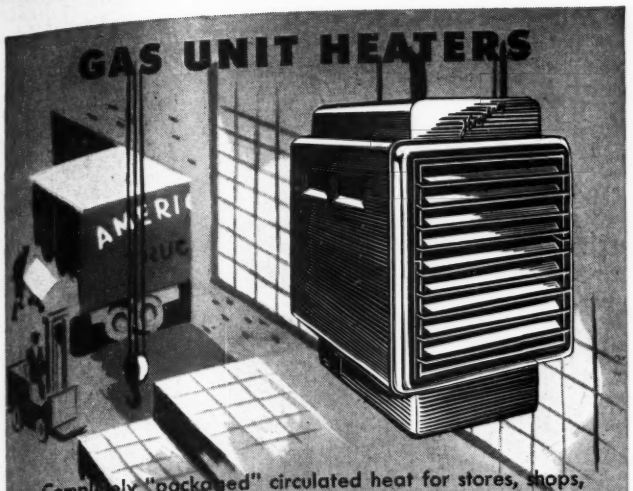
This marking is to appear in a conspicuous location on a part of the heater which is normally installed prior to plastering the wall. It provides a guide to the installer, gas company, and regulatory authorities as to the type of vent system that must be used with approved vented recessed heaters. The information is also required to be included in the instructions supplied with the unit.

Maximum operating temperatures

The average flue gas temperature from a recessed heater is not to exceed 480° F above room temperature. It is measured 3½ ft above the flue outlet of the appliance in a single-wall, insulated flue pipe attached to the unit and extending 12 ft above the test floor. Maximum temperature attained on the test wall in contact with the unit and within the stud space is measured by thermocouples attached to the surfaces. In no case is the temperature to exceed 90° F above room temperature. Any localized spot temperature at the warm air discharge opening is not to exceed 350° F above room temperature. Air discharge temperature is measured by exploration with four parallel connected bead type thermocouples spaced on corners on a 1-in. square and 1 in. from the grill face. The limit established for the warm air discharge by the unit when mixed in a normal manner with the room atmosphere is believed adequate to prevent heat discoloration of painted or wall papered surfaces above the warm air outlet.

Tests on recessed heaters for approval under these revised performance standards may be made at any time in advance of the effective date by the AGA Laboratories. Whether the unit has been tested under the revised requirements or under the current standard, it will be marked as to the type of vent system with which it must be used in the field. Use of the proper vent system as designated by the marking on the recessed heater will avoid many installation difficulties as well as eliminate many nuisance service complaints.

GAS UNIT HEATERS



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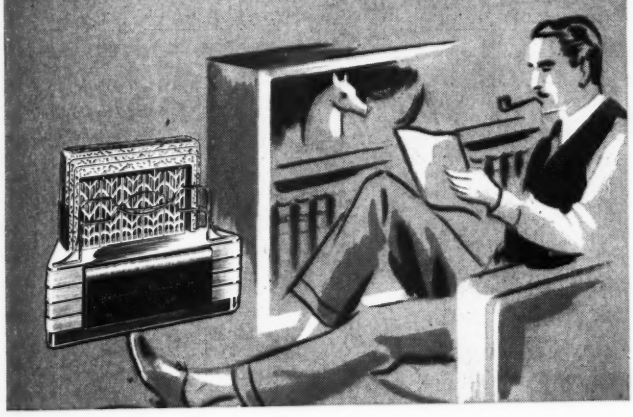

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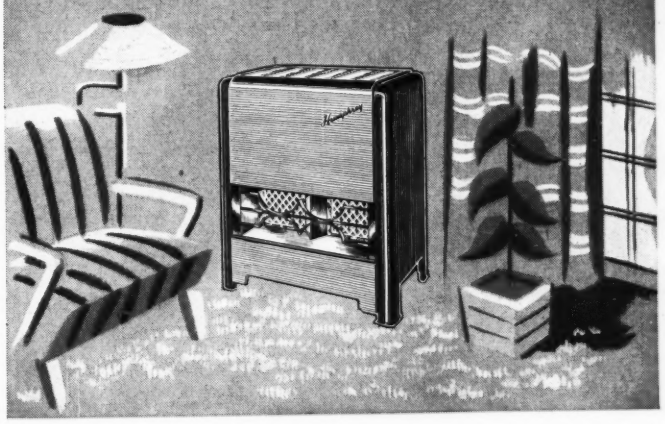

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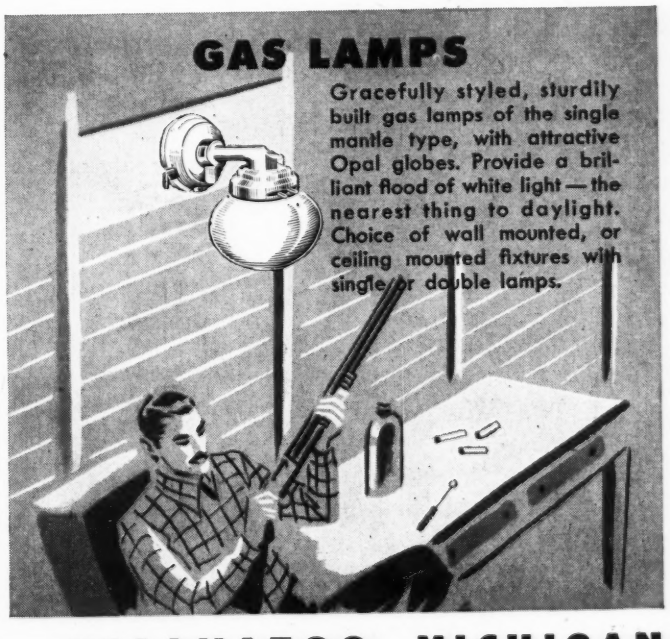

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If conversion saves the customer money, shouldn't he share in the cost?

How should old gas plant abandonment losses be treated in rate cases?

A RATHER startling question posed some weeks ago by the Milwaukee *Journal,* "Are natural gas customers in southeastern Wisconsin being asked to pay for a dead horse?" pointed up an interesting facet in a current rate case: the treatment of plant abandonment loss for rate-making purposes.

Wisconsin Natural Gas Co., the utility involved, had decided to abandon a coal gas production plant in 1950 when natural gas from the Michigan-Wisconsin line became available. For accounting purposes, the amortization of the $1,240,000 abandonment loss over a 120-month period had been approved by the state public service commission, but there was still some indecision on the part of commission staff as to this procedure for rate-making purposes.

This aspect of the case, on which hearings had been completed but no decision had been rendered at presstime, was the most spectacular from the newspaper's standpoint but was only one of several ticklish questions that required solving. Annual cost of capital was a serious bone of contention, as well as the related matter of whether ability to attract capital is properly the primary test in determining a rate of return. Fair value vs. original investment also came up in the hearings, as did the collated effect of inflation.

Earnings inadequate

In its brief, the company held (on the matter of the "dead horse") that provision for depreciation and earnings in past years had been inadequate to cover the abandonment loss incurred, and the commission staff agreed on the point. Earnings over 20 years through 1951 had averaged but 3½%, ranging from a high of 5.96% in the best year to a minus figure in 1947. The treatment of the loss as requested by the company was consistent with the state's uniform system of accounts. But whether the investor or the rate-payer should bear the loss, or whether they should divide the cost, and when, were different matters.

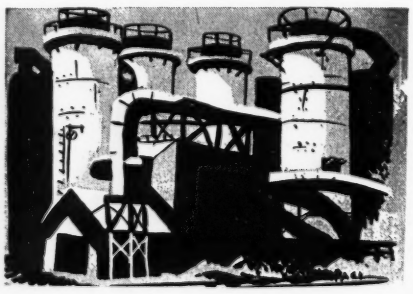
A. R. Colbert, chief of the accounts and finance department of the commission, admitted he was at sea on the proper steps to take. "It is only fair that it be recovered," he testified. But as to the question of "when," that "is very disturbing and must be decided by the commission. Should it have been recovered in earlier days or when, and what should be done with the income tax effect of the thing if it is allowed—those are very serious questions in this case and I simply don't know how to answer them."

One-year write-off?

Should the property have been written off entirely in the one year, 1950, when natural gas became available?

"There are some accountants who will argue that it should," was Mr. Colbert's reply. "I am inclined to think that it probably was the type of loss that warrants being deferred and spread because of the very nature of it, but that still doesn't answer the question as to what its treatment should be in the rate case . . . I can make a good argument either way on it and end up not knowing what is the right thing to do with it."

When asked, "If the loss had been taken all in the single year 1950, then in that year instead of taking four rate reductions, the company would have probably been entitled to rate increases, wouldn't it?" Mr. Colbert replied that he didn't know. "That," he said, "would depend upon how the commission would have treated that very unusual and heavy retirement loss for rate purposes."



His questioner asked whether the fact that it probably could not have been allowed all in a single year would be a "very good reason" for spreading it over a number of years. Yes, said the staffman, "if it is to be allowed for rate purposes. If it is not to be allowed for rate purposes we will have to look at some other reason to find the justification for amortizing it."

"The particular reason . . . that the company got benefit from this and the rate payers got benefit from this (would make it) appear to me that there should be some division of charge between the investors and the rate payers."

$3 million savings

The four rate reductions referred to were made in the first eight months after natural gas was introduced. While savings to the date of the hearings had aggregated $1,038,120, a figure somewhat less than the abandonment loss, Vice President L. F. Seybold testified that customers were actually saving $3 million a year. He said: "The calculation of these decreases was made on the basis of consumption at the time of the rate decrease. The calculations therefore do not reflect the effect of increased use of gas which has taken place since the time the reductions were made and this date. If that were done we would find that the customers today are paying about $3 million a year less than they would pay if that same gas service had been purchased at the level of the manufactured gas rates in effect early in 1950 before conversion."

Bulk of the company's brief revolved

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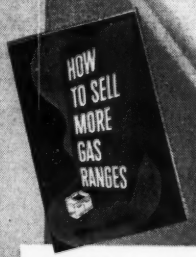

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around the currently pressing problem of cost of capital. The company was proposing to float a new $1 million issue of common stock. Mr. Seybold testified that the annual cost of capital, including the issue, aggregates $854,669; the basis is that 10.5% represents the fair cost of the equity capital, since it is the annual cost of equity capital of 17 natural gas distributing companies. Mr. Colbert held that 6.22% represents the composite annual cost of capital because that is the "cost to Wisconsin Electric Power Co. (Wisconsin Natural's parent) of obtaining its capital." He applied the parent's capital ratios to Wisconsin Natural's, even though, according to company lawyers, "the latter's ratios were entirely different in fact." Debt ratios are at considerable variance.

Costs of capital

Although the costs of capital for an electric company admittedly aren't the same as for a gas utility, still Wisconsin Electric, being the parent of the gas company, "is the source of capital in substantial part to the gas company . . ."

Mr. Colbert refused to agree that a study of the percentage of common stock earnings of natural gas companies in recent years would be helpful in determining what should be allowed in the case.

On the question of the primary test of determining rate of return, Mr. Colbert stated he thought the primary test is "the ability to attract capital as needed."

"Is it possible, then, to attract capital by paying less than a fair rate of return?"

Possibly for a short period, Mr. Colbert thought, but not over the long pull.

Recognizing that annual cost of capital and ability to attract capital are important factors in any rate case, the company held that there are other factors of equal or greater importance to be considered, if justice is to be afforded to past investors as well as to future customers. In times of inflation, the company declared, consideration of cost of capital as the dominant factor "penalizes and liquidates past investment and forces it to subsidize new investment." The current size investment dollar commands the same return as the large size dollar invested in former years. Harold A. Scragg, chairman of the Pennsylvania Public Service Commission, was quoted as saying that such a "yardstick" as the mere upholding of nominal book equity per share in a period of shrinking dollar values becomes a "foot rule" and is meaningless.

"Thus, while 10 current dollars of earnings related to 100 current dollars of capital would have meaning, a 10% rate of return, 10 current dollars of earnings related to 100 1940 dollars (would represent) only 5% instead of 10%."

"The ability to raise capital (as a test of reasonableness in determining rates) must be examined in the light of whether it has been of such kind and on such terms that existing owners have been treated fairly and equitably."

The extent to which past investors could be liquidated was illustrated as follows:

Assuming that the assets of a public utility consist of a plant ("A") constructed in 1940 at a cost of $5 million, financed by the issuance and sale of 500,000 shares of common at $10 per share, and assuming that in 1952 another identical plant ("B") was built, costing $10 million, financed by the sale of 1 million shares of common at $10, the original investors who supplied funds to build 50% of plant end up with 33⅓% ownership.

Maintaining "integrity"

If, however, the rate making tribunal had allowed rates to be charged such as to maintain integrity of prior investment rather than current cost of capital, the new investors could have been induced to pay $20 per share for the stock, so only 500,000 shares would have had to be issued and sold.

"Moreover, the maintenance of the integrity of the investment made by the original investors would not result in unjust charges against the customers of the utility. Had the new plant been constructed by the issuance and sale of 500,000 rather than 1 million shares, future rate payers would be required to support the payment of dividends on a smaller number of shares."

Newly patented: a flow controller and a combustible gas indicator

TWO new pieces of equipment for the gas industry, one an apparatus for measuring the combustible content of a gas, the other a flow control apparatus, recently were awarded U. S. patents.

The combustible gas indicator was designed as a means of overcoming what the inventor, S. B. Spracklen of St. Albans, W. Va., claims are major objections to instruments currently on the market: the need for frequent calibration and the necessity of having a direct current source, and drift.

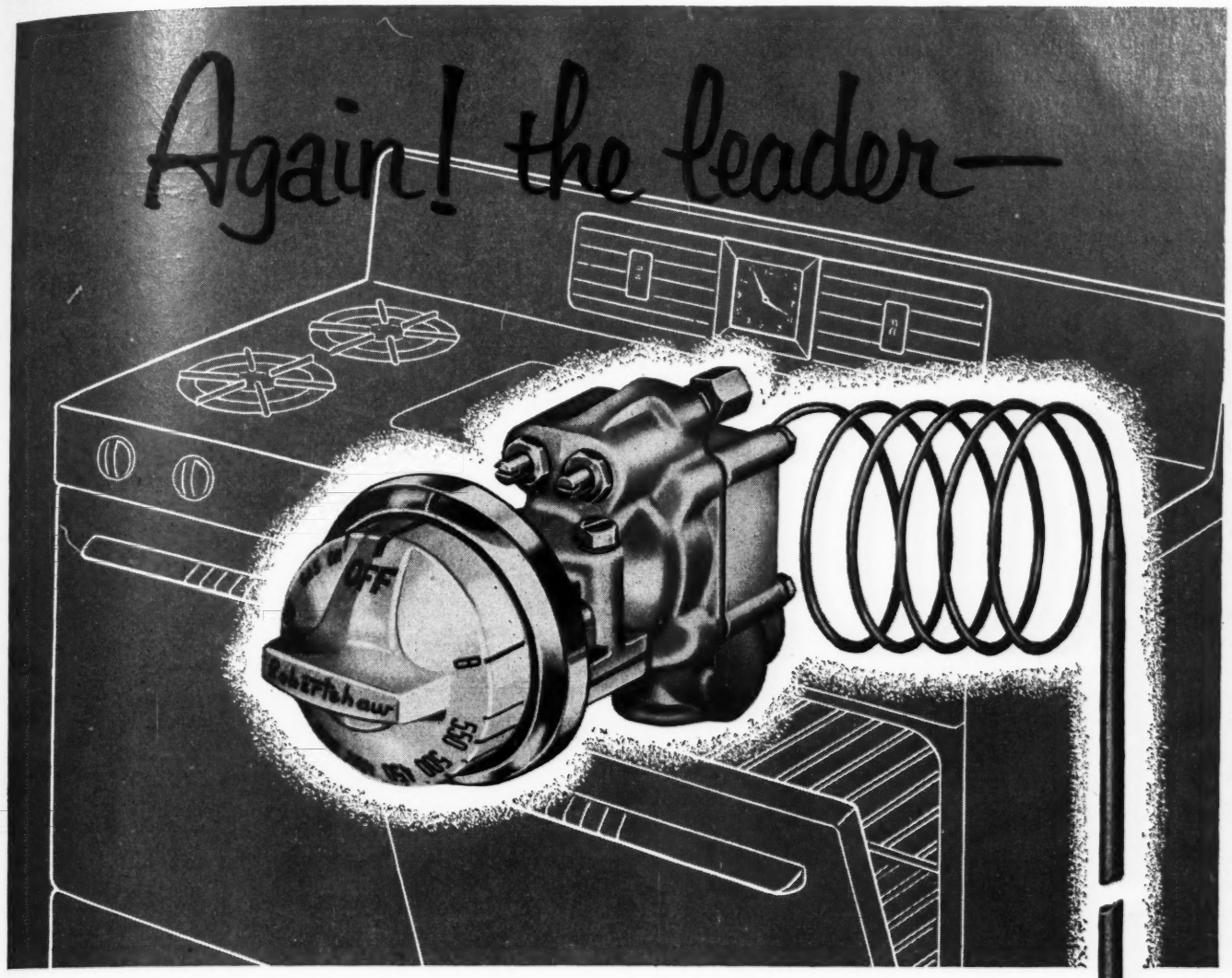
Conventional method

The conventional method for indicating the combustible content utilizes a heated non-oxidizable catalyst metal filament having at least the temperature of the mixture of combustible and oxiding gases. An increase in the temperature of the filament occurs proportional to the amount of combustible in the mixture. The filament is placed in the arm of a Wheatstone bridge when the increase in temperature caused by the combustible is indicated by measuring the change in electrical resistance of the filament.

In this invention, the difficulties have been eliminated by indicating the temperature of the catalyst filament directly, without noticeable loss in heat from the filament. A thermocouple of about the same diameter as the filament and in direct physical contact with it at a thermally conductive joint has been spot-welded to it. This has assertedly given greater accuracy, and reduced the drift to 2% to 5% of its former dimensions, thus reducing the frequency of calibrations. The so-called drift, or change in the output of the indicating element in a fixed direction for a given period of time, was caused principally by evaporation of the catalyst filament at elevated temperatures.

Evaporation difficulty

One difficulty with conventional equipment has been that slight evaporation of the catalyst under the temperatures encountered causes a change in resistance of the filament necessitating frequent calibration sometimes as often as every few hours. Another disadvantage is that a direct current source has been usually required for the conventional indicating instruments used with such a bridge. In an analyzer operating 24 hours a day a direct current source may be dif-



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ficult from the standpoint of cost, space and stability requirements. Also the calibration of an instrument to indicate a combustible gas content is non-linear when measuring with a Wheatstone bridge. If a temperature indicating apparatus is spaced from the catalyst filament by only a very small air gap such as has been found to have so steep a temperature gradient as to make the temperature indications unreliable. There seems to have been some reluctance to make a direct contact between the catalyst filament and any thermally conductive temperature indicating apparatus possibly in the belief that heat conducted from the filament would create too great a source of error.

To lessen the likelihood of error by change in the heating of the filament up to the ignition temperature of the gas, and to reduce any error due to changes between temperature of the air and gas being examined, the temperature of the air and gas being analyzed are both substantially equalized and a second filament similar to the first is enclosed in air or other non-combustible gas and heated by a separate impressed voltage which is identical with that impressed on the first filament. A similar thermocouple is connected in the same manner to the second filament but arranged to have its voltage oppose that of the first thermocouple. In this way any change in temperature of the filament due to its impressed voltage introduces no error because output of both thermocouples is responsive only to the additional heating of the first filament due to the combustible gas being analyzed. The thermocouples have been of about the same size as the filament with the result that thermal conductivity from the filament is so small that no heat has been perceptible in the thermocouples a small fraction of an inch away from their spot welded junction with the filament.

Primary object

The primary object of the flow control apparatus, the invention of W. C. Conkling, West Caldwell, N. J., is stated to be the more accurate control of flow at low rates. Other equipment for use in feeding gas employs a fixed resistance in the conduit structure used for gas flow, together with the means for adjusting pressure conditions in the conduit so that the rate of flow past the resistance will change in a known manner as the pressure changes; according to the inventor, such devices have a limited range under many circumstances because of the characteristic of flow through an orifice.

This invention has other aims. It seeks to provide means in which the flow-determining pressure differences are controlled by instrumentalities that afford the maintenance of very constant and readily adjustable pressures, especially negative pressures throughout all portions of a desired range. Another object is to provide such apparatus wherein a desired relationship between actual gas flow and the controlling pressure difference may be established (i. e. a relationship different from that ordinarily characterizing flow through a fixed orifice, for better control of gas flow), and also if desired, to afford a more convenient type of scale or indication for registering the magnitude of flow.

Improved gas feed

Another and more specific object is to provide improved gas feed apparatus wherein the rate of flow may be linearly or approximately linearly proportional to the pressure difference which is adjusted to change the flow, so that a wider range of flow variation is obtainable and likewise a better control at low rates of flow, while at the same time a linear indicating scale is readily permitted for reading the actual value of flow at any time.

In other equipment—for instance, in one form of apparatus whereby the contents of a water main or the like are treated with a gas, such as chlorine, for purification, by first incorporating the gas in a minor stream of water leading to the main, the control means for the rate of actual gas feed to the minor stream has included a fixed orifice (sometimes called a metering orifice) with adjustable means for maintaining a constant pressure drop across the orifice, i. e. constant at any selected magnitude within the range of adjustment. An effective arrangement is to feed the gas under a vacuum or "negative pressure" established by an aspirator, thus serving as the gas injector, in the conduit for the minor flow of water. The difficulty here, according to the inventor, is that gas flow past such a resistance is generally proportional to the square root of the pressure difference across it, and in consequence the flow at a large pressure difference is not proportionately high in relation to the flow at small differences. That is to say, as the pressure drop increases the rate of flow increase becomes smaller and smaller. As a result, within a useful range of negative pressures, the range of flow variation is limited.

What would you do?

- *Floor furnace is badly in need of adjustment; customer is unable to use it and must have heat because of illness. Customer requests that small man be sent out to service furnace as average size person cannot get under house to furnace.*

During regular working hours

1 company does not allow servicemen to crawl under houses.

5 companies would investigate. If accessibility did not meet certain requirements, the customer would be referred to a furnace agency.

2 companies would refer to a furnace agency.

1 company would require the furnace be made accessible or no call would be made.

1 company would dispatch the smallest serviceman available. If inaccessible, customer would be referred to a plumber and cautioned that reasonable access space would have to be provided for future service.

After regular work hours

4 companies would not make a call.

1 company would require that the furnace be made accessible.

1 company would dispatch the smallest serviceman available. If inaccessible, customer would be referred to a plumber and cautioned that reasonable access space would have to be provided for future service.

The service policy rule book doesn't always give the answer to whether, when, or how unusual service requests should be handled by utilities. The 10 companies who provide their own answers here are PCGA member utilities; the problem was one of 35 posed by H. E. Benninghoven, San Diego Gas & Electric, in a survey reported at the PCGA customer service conference, Fresno, Calif., March 18.

NEW SERVEL UPS NIGHT-AND-DAY KITCHEN GAS LOAD!

Americans everywhere are flocking to see the new Servel Ice-Maker Refrigerator in action! This is great news for you because the new Servel is your greatest opportunity in years to insure and increase year 'round, night-and-day kitchen load! A $6,000,000.00 ad drive is bringing the Servel story into every city and town in the nation . . . and Servel means gas to millions! There's still time to tie in with this all-out drive . . . contact your Servel distributor today!

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Oil imports seen as threat to gas supply, exploration

By MERLE CUNNINGHAM

THE increasing importation of petroleum into this country and the resulting decrease in domestic oil production has an effect on the gas industry and could reach harmful proportions. This is the contention of some members of the oil and gas industry, who foresee a possible shortening of gas supply in the future, if the import trend continues.

Already the production of casinghead gas is being reduced with the decrease in domestic oil production, and continuing oil importation at the present rate eventually could mean less dry gas as well. Gas reserves still are discovered largely through the exploration for oil, and less oil well drilling means less natural gas discoveries.

"The immediate reduction in the search for oil is, in effect, at the same time a reduction in the search for natural gas," says a spokesman for a major Texas gas company.

With the current loss in revenues sustained by many oil producers, it is speculated they may not long be willing or financially able to continue to put back more than $1 per barrel to secure replacement production for every barrel of oil marketed. The present cutback in Texas oil production means a loss in revenue to producers of almost $1 million per day.

G. Scott Hammonds of Dallas, chairman of the oil import committee of Texas Independent Producers and Royalty Owners, said the flooding of the domestic market with foreign oil is destroying the domestic producer's incentive to drill.

Oil imports for the week ended April 4 hit the second highest mark on record in averaging 1,256,700 bbls daily. Oil importation has been rising steadily, from 424,000 bbls daily in 1949 to 573,000 bbls a day in 1952, and imports for 1953 were estimated by the Independent Petroleum Assn. at 663,000 bbls daily.

Because of excessive imports, the Lone Star state, number one producer of oil in the nation, suffered a cutback in oil production in the four months through March of 11%, or more than 385,000 bbls a day. In the other oil producing states there was a 4 to 5% reduction. While crude stocks of Texas origin in April stood at 524,000 bbls less than in March, foreign crude stocks increased by 878,000.

U. S. production of crude oil this year has been estimated by the IPAA at 6,-241,000 bbls a day, a decrease of more March, foreign stocks increased 878,000.

Of the nation's marketed production of natural gas, more than one-half comes from Texas, where a little more than one-fourth of the state's total production is made up of casinghead gas.

Some 88,000 of the 140,000 producing oil wells in Texas also produce merchantable casinghead gas, and in recent years gas produced with oil has been utilized in greater increasing quantities.

One of the major pipeline companies in the country is also one of the largest users of casinghead gas. In 1940, when the company began marketing gas of this type, it supplied only 5.49% of its total requirements with casinghead. By 1952, the percentage of residue gas supplying the company's total requirements was about 60% and amounted to 291,360 MMcf of gas. However, the present situation has no effect on the company's gas supply, as it is well able to operate with increased or decreased casinghead production.

A Texas gas company serving more than 600,000 customers in Texas and Oklahoma also uses a substantial amount of casinghead gas, from 40 to 50% of its total requirements.

The manager of the company's exploration and gas supply department pointed out that only about 10% of the company's casinghead supply has been affected by the current cutback in oil production due to imports.

"With an abundant supply of dry gas, we have no immediate problem of availability of gas," he said, "but the gas industry as a whole might some day be affected by the discouraging situation right now in which oil producers are finding themselves without incentive and ability to explore as they wish."

The independent producers are not passively viewing the problem. They are actively seeking some means of curbing oil imports. The Independent Petroleum Assn. of America is supporting a bill introduced in Congress recently by Sen. Frank Carlson (R.-Kan.) to restrict oil imports to 10% of domestic consumption. The IPAA's general counsel, Russell B. Brown, also has described as "constructive" a bill introduced by Rep. Richard M. Simpson (R.-Pa.), which would limit imports of residual fuel oil to 5% of domestic fuel oil demands.

As another approach to the situation, Texas Independent Producers and Royalty Owners at their annual convention in March, voted to ask aid from the Petroleum Administration for Defense. The Texas organization would like to see the PAD call importing companies together and get them to agree on voluntary quotas, limiting imports.

The administration's deputy petroleum administrator, J. Ed Warren, says he prefers that oil importing companies voluntarily and by self-restraint slow up their deliveries to American shores at this time.* He has opposed Congressional or federal action on imports, which he said might make it impossible to step up the flow of foreign oil in time of emergency.

President Eisenhower declared recently he favors a one-year extension of the present Reciprocal Trade Act, now due to expire June 4, in order to give more time to study the tariff situation.

Another threat to the gas industry may lie in the reduction of state revenues due to decreased oil production. The present cutback in oil production in Texas, which obtains more than half its revenue from the oil and gas industry, runs into millions of dollars. Natural gas might be further taxed to help make up the loss in revenues. Several bills are pending in the Texas legislature, now in session, to increase the tax on gas.**

*Companies voluntarily cutting their imports: Socony-Vacuum Co., 5000 bbl a day for the next four months; Gulf Oil Corp., 5% reduction in second quarter; Standard Oil Co. (N. J.), is cutting its crude imports 18,000 to 20,000 bbl daily for the balance of the second quarter. The reason for the cut, according to Standard President Eugene Holman, is that "we're over-inventoried." He maintains that domestic oil and coal producers have not been harmed by foreign oil imports.

**Two years ago a natural gas tax battle was linked with farm-to-market roads—now Texas school teachers have replaced the roads. Natural gas pipelines are the likely target for a $600-a-year pay raise for teachers, the raise to cost the state about $33 million a year. The president of the Jim Wells County Farm Bureau thinks that if additional revenue is needed to finance teachers' pay boosts, the money should come from a tax on natural gas because "natural gas does not now pay its fair share of the tax bill. . ."

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Every home owner wants an A.O.Smith Permaglas®

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Consumer acceptance of *Permaglas* proved by more than 2 million A. O. Smith glass-lined water heaters installed in American homes.

Sell the automatic water heater your prospects want . . . the water heater with the exclusive formula glass-surfaced steel tank that can't rust because glass can't rust . . . *Permaglas!*

Get the big share of water heater sales in your community with *Permaglas* . . . the automatic water heater with *exclusive sales plus* features: Glass lined tanks . . . Heetwall construction . . . 100% efficient controls. *Sell Permaglas!*

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PERMAGLAS is backed by the greatest, most consistent and continuous advertising-sales promotion campaign in the industry!

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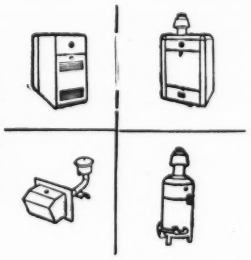

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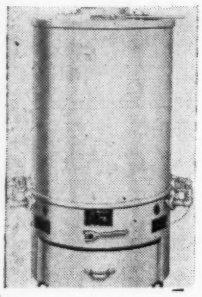
New Products and Trade Literature

To secure further information on products or new literature, simply fill out the coupon and mail, indicating by number the information or literature needed.

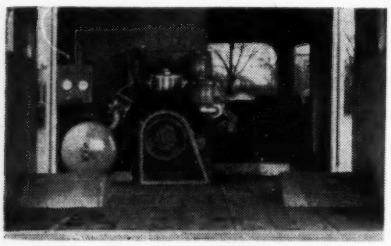
1 Incinerator



Production of a new commercial, 4-bushel capacity incinerator known as the B-42 Incinor has been announced. It is gas-fired, using 50,000 Btu per hour input, and has twin, ribbon-type burners, manual push-button lighters, and baso-thermocouple valves for safety. Due to the high Btu input, combustion takes place rapidly with a minimum of smoke. The unit is 44 in. high, 28 in. wide and weighs 336 lbs.

Bowser Inc., Incineration Div.

■

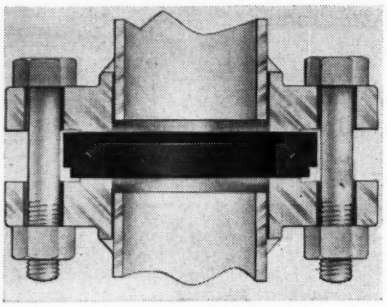


2 Compressor

A new truck-mounted air compressor assembly, the "Air Van," has been designed around the recently introduced Fageol Van truck, manufactured by Twin Coach Co. The compact compressor occupies only about one-quarter of the truck body space, leaving the remainder free for transportation. They are offered with a choice of 105 or 106 cfm standard "Auto-Air" compressors which are driven directly from the truck engine.

Davey Compressor Co.

■



3 Flange Gaskets

Designed to prevent leakage due to misalignment, the Vic-O-Seal metal aligning flange gaskets have a positive sealing design for preventive maintenance.

The new gaskets provide positive seal on misalignment up to 6° and avoid costly welding fixtures. Available with an "O" ring, the gaskets can be used on all standard fittings and with all fluids, gases, and air. According to the manufacturer, Vickers Inc., the gaskets have been time-tested at over 7000 psi and did not show leaks or wear.

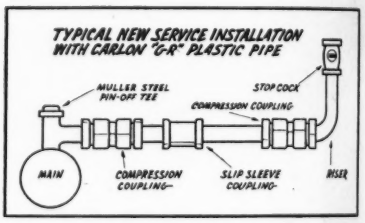
Vickers Inc., Div. of Sperry Corp.

4 Water Heater Control

Titan Tankmaster water heater controls are now available with a silvery, electro-tin finish that harmonizes with modern water heaters and makes the control an inconspicuous part of it. Features include resistance to tarnish and almost 100% non-corrosiveness and non-toxic qualities.

Titan Valve & Manufacturing Co.

■



5 Plastic Pipe

Two new types of plastic pipe for installation of new gas service lines and the replacement of old corroded metallic ones have been announced by Carlon Products.

Illustrated is the Carlon GR for new gas lines. The GR pipe has an effective fiber stress of more than 3600 psi and is suitable for any type of climate, resisting chemical attack of corrosive soils and water. The 20-ft sections can be connected by means of any standard compression coupling or cemented type coupling, as well as the all plastic compression coupling manufactured by Carlon.

Carlon GF, for replacement service, is inserted directly into the old service line and, with its flow characteristics, will supply a comparable volume to the meter. It is connected directly to the service tee by means of a compression coupling and to the riser

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GAS, 198 S. Alvarado St., Los Angeles 57, Calif.

5/53 Fill in numbers of items in which you are interested.

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Caloric MEETS THE CHALLENGE of declining Dealer Profits

. . . with America's Most Beautiful Range . . . the Color-Styled Caloric Gas Range!

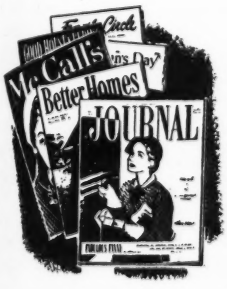
COLOR is a magic word in selling the American housewife, today. And, now, for the first time, Caloric gives you a *practical* way of using this powerful sales weapon to sell more Gas Ranges.

The completely new, completely automatic Caloric features *detachable handles* in twelve modern decorator colors. There are gay Sunburst Yellow handles to highlight the new knotty pine kitchens; rich Maroon handles to accent a cool gray color scheme; Forest Green handles to contrast with a sunny yellow kitchen, and so on.

It's new! It's exciting! It's exclusively *Caloric!* It presents an unequalled opportunity for record-breaking sales.

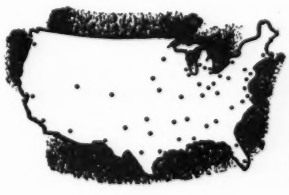
. . . with Caloric's "Direct-to-Dealer" Sales Policy that provides a Profitable mark-up

What will be *your* profit picture in 1953? Caloric dealers *know* that every sale is a *profitable* sale, because they buy direct from the factory on a price structure that allows a full and generous mark-up . . . enough to pay for today's high overhead and still leave an acceptable margin of profit.



. . . with the largest magazine advertising campaign in range history (in full color)

Caloric—for years the Range leader in magazine advertising—again sets the pace in 1953 with the most powerful magazine advertising ever run at any time, by anyone, in Range history. Dramatic advertisements on the Color-styled Caloric line are appearing in fifteen leading magazines —in full color—month after month.



. . . with practically overnight delivery from 47 warehouse points

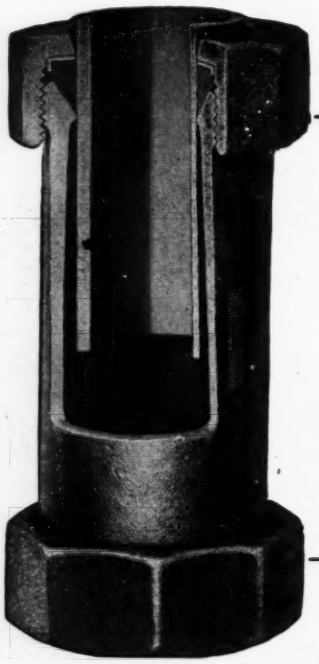
Wherever your place of business, there's a Caloric warehouse near you. Fast delivery service keeps your stock investment down; keeps your models "factory-fresh."

Make the Caloric line your profit line for '53. Write or wire to Caloric Stove Corp., Topton, Pennsylvania

Caloric®

COLOR-STYLED GAS RANGES

America's Easiest Ranges to Keep Clean



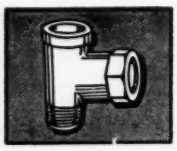
NORMAC

Couplings, Sleeves and Fittings

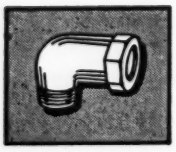
for maximum deflection, ease of "stabbing," complete confinement of the rubber!

So close are "Normac" rubbers confined at the gasket tip that possibility of flow is reduced almost to "nil." These couplings, sleeves and fittings . . . approved by gas utility men across the country for their time-saving features, ease of handling and dependable service . . . are available in a complete range of sizes. Made from air furnace malleable iron they provide greater wall thickness than pipe on which used.

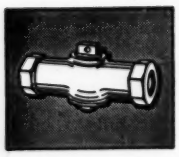
NORMAC COUPLINGS are made with 5" centers in all sizes. NORMAC SLEEVES are identical in design except that they are made with 10" centers. Nuts and gaskets are interchangeable.



Compression-End Service "Tee"—First fitting of this type ever produced with full coupling depth and special threads on male end to prevent dropping into old hand taps when used to replace standard threaded fittings.



Compression-End Service "Ell" — Extra depth makes it possible to "stab" pipe into stops and without measuring, pull back a safe distance to allow ultimate deflection eliminating possibility of strain against tap in main.



Compression-End Iron Body Brass Core Service Stopcocks—End the necessity of threading on the job plus the elimination of the threads themselves—combining all the advantages of NORMAC COUPLINGS and the best in stopcock design. 2½" coupling depth on each end.

Normac Brass Fittings Developed in 1939 for Use with Copper Tubing—Our complete line of brass fittings can be used either on new installations or where copper is run through old steel pipe in large or small openings. The center to end dimensions of NORMAC TEES correspond with old malleable iron fittings. This feature is extremely important in the use of these fittings in one foot openings where the tubing must line up with the steel which has been removed.

Write for the NORMAC CATALOG of Gas Distribution Equipment

NORTON-McMURRAY MFG. CO.

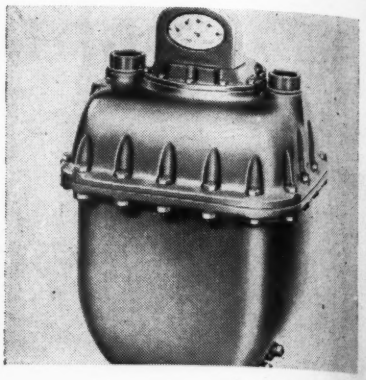
122 SOUTH MICHIGAN AVENUE - - - CHICAGO 3, ILLINOIS

Couplings • Motor Bars • Sleeves • Cocks • Bell Joint Clamps • Service Tees & Ells

by a plastic adapter and compression coupling. Carlon GF is supplied in lengths up to 250 ft.

Carlon Products Corp.

■



6 Gas Meter

An aluminum gas meter weighing only 63 lbs is now being produced. Known as the Rockwell "800," this meter is a positive displacement type, utilizing side-guided and gear-driven valves. It operates at capacities of 800 cu ft at ½-in. differential and 1600 cu ft at 2-in. differential with a maximum working pressure of 100 psi. It is designed for use in small shops, laundries, and other commercial establishments.

Rockwell Manufacturing Co.

■

Trade Literature

7 Valve Catalog

"Valves for the Gas Industry" is the title of a 48-page catalog illustrating all types of Gas Machinery Co. valves—gate, control, angle, butterfly, reversing, hot gas, check. It contains descriptions, construction features, sizes, and dimensions.

Gas Machinery Co.

■

8 Eclipse Catalog

Eclipse Super-Matic Scotch "Steamboiler-plants" are described in a new catalog. The nine-page catalog completely describes and illustrates the units, which are self-contained, fully automatic, assembled, and ready to produce hot, dry steam.

Eclipse Fuel Engineering Co.

■

9 Allis-Chalmers Publications

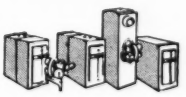
Three catalogs have been issued by Allis-Chalmers. (When asking for copies of any one bulletin, use the letter preceding the description together with the number in the title.)

(a) Single-stage, double-suction centrifugal pumps are the subject of a revised bulletin. In addition to providing data on the

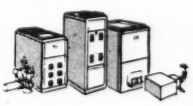
They ALL come to see the man with all THREE —the EUREKA *Williams* dealer!

THREE FULL LINES of home comfort products put you way ahead. For one thing, you don't miss a sale—you can and do meet *every* customer's product preference. Another thing—there are no seasonal slumps when you're a Eureka Williams dealer. With OIL-O-MATIC and GAS-O-MATIC Heating *plus* AIR-O-MATIC Cooling it's "open season" for sales the *whole year 'round.*

If you're a progressive dealer with an eye to the future, try this combination. *One* famous name, based on thirty years of leadership—backed by *three* full lines—and boosted by *four-season* selling! Better write today for the profit-facts of the Eureka Williams Franchise.



OIL-O-MATIC Home Heating—with exclusive *Metered Low Pressure.* Complete line for homes of all sizes—for all types of heating.



GAS-O-MATIC Home Heating—with exclusive *Metered Flow Pressure.* Models for homes of every size, large and small.

AIR-O-MATIC Home Cooling—latest member of the famed Williams family. Installed with Oil-O-Matic, Gas-O-Matic or existing forced warm-air heating system to provide *year 'round* air conditioning at very low cost.

EW PRODUCTS

WILLIAMS DIVISION

Eureka Williams Corporation • Bloomington, Illinois

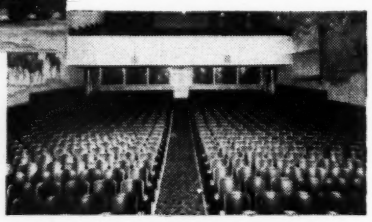
In Canada—Williams Oil-O-Matic of Canada, Ltd., Guelph, Ontario

Better Products, Better Made... *for better living!*

ARE AIR CONDITIONING COSTS CUTTING YOUR PROFITS?

Ready-Power Offers a Dollars-and-Sense Solution

This restaurant and nite club is always comfortable, thanks to Ready-Power Natural Gas Air Conditioning.



Ready-Power is ideal for theaters.

This office is Ready-Power Air Conditioned.

Many supermarkets have Ready-Power Air Conditioning.

You *can* have air conditioning without paying the "long dollar" for operating costs! Ready-Power's amazingly low cost of natural gas operation —*the lowest known*—results in savings that add up to extra profits for you.

Ready-Power natural gas air conditioning units are built with automatic controls that provide an extremely wide capacity range to meet varying load requirements.

Thus you are assured of the most economical operation under all weather conditions, while maintaining precise control of both temperature and humidity.

See your local gas company or write direct for complete information.

READY-POWER

SAVES AS IT SERVES

For complete information please write to

THE READY-POWER CO. • 11231 Freud Ave., Detroit 14, Mich.

Manufacturers of Gas and Diesel Engine Driven Generators and Air Conditioning Units; Gas and Diesel Electric Power Units for Industrial Trucks.

pumps' construction features, the bulletin explains how to figure pumping head, carries tables of available sizes, approximate dimensions and head capacities, and tabulates friction loss for water per 100 ft of pipe.

(b) "Pipelining" shows the application of Allis Chalmers equipment on every phase of pipeline work.

(c) A motor and generator reference booklet has been designed to assist in the selection of motive power to handle most industrial applications. It is reprinted from the 1952 edition of Lincoln's Industrial-Commercial Electric Reference.

Allis-Chalmers Manufacturing Co.

■

10 Pipe Wrap Bulletin

The part played by Vitron underground pipe wrap in protecting steel pipe from corrosion is described in a new bulletin from Glass Fibers. Its various applications are illustrated and general specifications for applying Vitron pipe wrap are included.

Glass Fibers Inc.

■

11 Filter Bulletin

Four new low pressure pipeline filter models are described in a four-page illustrated bulletin from Dollinger Corp. Specifications, engineering, and performance data are presented on the filters, which are recommended for removal of dust, dirt, pipe scale, condensed oil, and water vapor from compressed air lines.

Dollinger Corp.

■

12 Honeywell Catalogs

The availability of several catalogs and bulletins has been announced by Minneapolis-Honeywell. (When asking for copies of any one bulletin, use the letter preceding the description together with the number in the title.)

(a) One bulletin describes operation, features, and applications of a new flexible temperature-time program controller, including components and specifications.

(b) Catalog 1053 describes Brown millivoltmeter type instruments: indicators, indicating electronic controllers, and excess temperature safety cut off controllers. Data on primary measuring elements, dimensions, ordering information, and scale selection tables are included.

(c) Catalog 1530, "ElectroniK Controllers," has 56 pages of information on instruments used to measure and control a multiplicity of process variables. Included are detailed specifications and control action descriptions and ratings.

(d) A set of seven new specification sheets in consolidated style covers flow meters. Construction and engineering details are included.

Minneapolis-Honeywell Regulator Co.

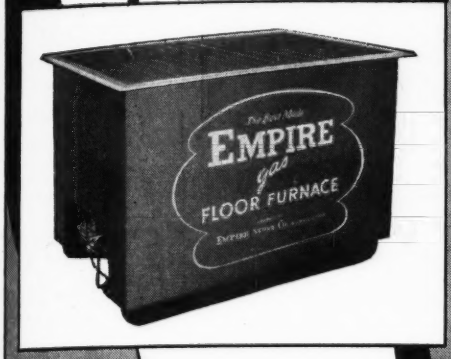
EMPIRE *Gas* HEATING APPLIANCES

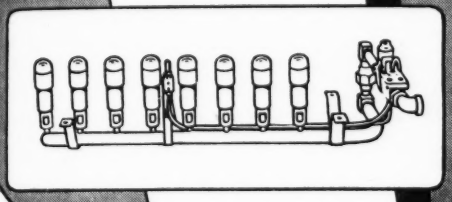
Pull Sales!

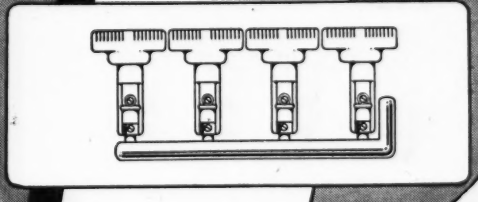
NO BOOM
NO BANG
NO LOUD TICKING

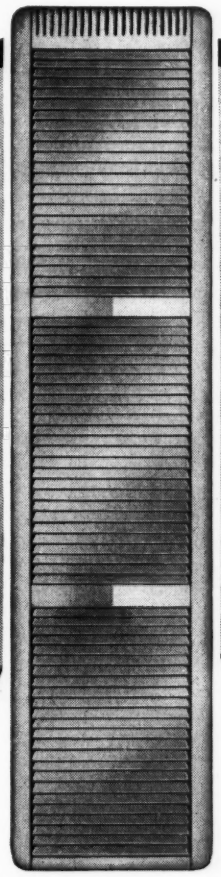
SILENT AS A KITTEN WITH AN EXTRA SET OF FOOT PADS!

It's cool
It's cool









The FAMED
"Thriftmatic"
GAS BURNERS
Attracts
PROSPECTS
and
PROFITS

See your Empire representative or write direct to Empire.

World's Largest Manufacturers of Gas Floor Furnaces

EMPIRE STOVE COMPANY
BELLEVILLE
ILLINOIS

Thermally Thinking

Continued from page 24

ing of Gov. John S. Fine. But now it's doubtful that Gov. Fine will want to jeopardize his political life by supporting such an unpopular measure.

The bill, introduced a couple of months ago, would ban underground storage of gas within 4000 ft of working coal mines. Why Mr. Kent would be the one to sponsor it remains somewhat of a mystery, since his constituency is far from being a major coal producing area.

There is considerable disagreement between gas companies, on the one hand, and coal interests, on the other, as to the effects such a law would have. Peoples Natural of Pittsburgh says seven of its nine gas pools would have to be "moved." A coal spokesman pooh-poohs this, declaring that less than 10% would have to be dislocated. Even 10% of the present volume of more than 280 billion ft would be a sizeable figure, of course.

If misused, a law of this sort could be a potent weapon, since, according to statute, wherever five men are working a coal digging, that's an "operating coal mine." And in many areas throughout the state, coal can be found anywhere anyone chooses to dig. The gas company's half-serious suggestion that coal mines be barred near gas storage pools, if carried, would force closure of only 10% of the state's coal production—a large figure, it's true, but a less important one than 10% of the gas volume stored, since coal is much easier to locate than storage structures.

Purpose of the bill is purportedly safety, although the gas industry looks upon it as a competitive threat (which coal interests deny). Bureau of Mines records show that mine operations have cut into unchartered gas wells in eight or nine instances over the past 15 years, but only a single death is recorded. A major problem here would seem to be that miners don't know where the wells are.

So far the most effective countermeasure has been the suspension by Peoples and Equitable of new gas househeating installations pending disposition of the bill. Pittsburghers shudder at the thought of once more being the butt of the gag about "coming clean from Pittsburgh," but reconversion to coal would have larger implications. Along with the grime and discomfort, it would cost an estimated $50 million for homeowners in affected areas, so they say.

Public relations

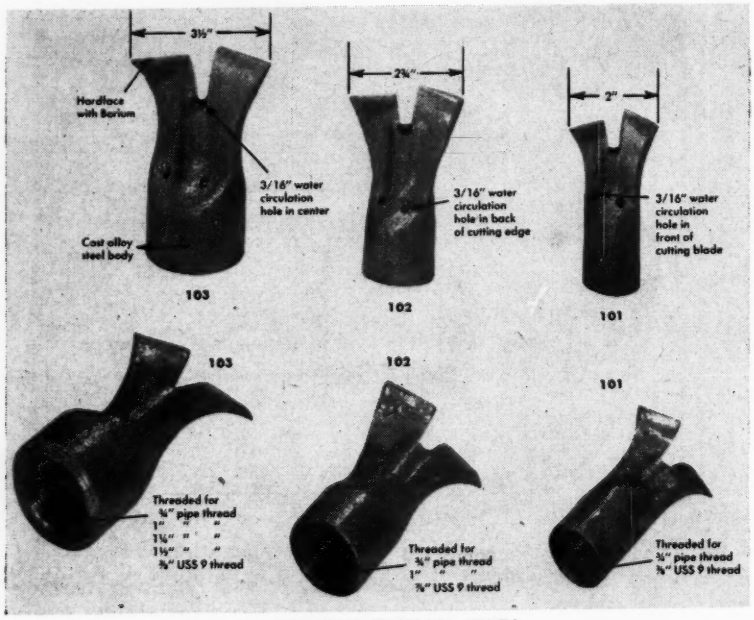
Maybe it's the influence of spring, or sump'n, but now everybody's busting out with bright new public relations programs to win new friends for the gas industry. Hardly was the ink dry on the final draft of the new AGA package when Independent Natural Gas Assn., a group which consists mainly of pipeline companies, but theoretically (and to a certain extent, practically) covers all phases of the industry, blossomed forth with its own version.

So now there are three, GAMA's having been the leader by a couple of years—or will be three, if AGA can go over the top on subscriptions. (As

Reduce UNDERGROUND PIPING Cost

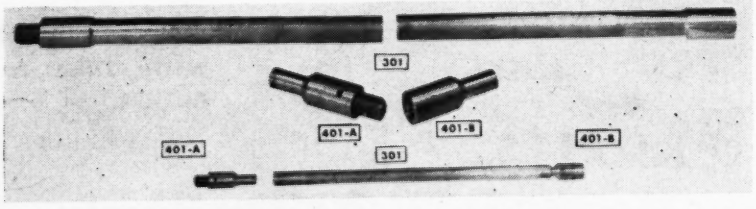
With Melfred horizontal earth boring equipment

- This equipment has been used and proven by the largest pipe line contractors and utility companies on the Pacific Coast in the past 5 years.


3½"
2¾"
2"
Hardface with Borium
3/16" water circulation hole in center
Cast alloy steel body
3/16" water circulation hole in back of cutting edge
3/16" water circulation hole in front of cutting blade
103
102
101
Threaded for ¾" pipe thread 1" " " 1¼" " " 1½" " " ⅞" USS 9 thread
Threaded for ¾" pipe thread 1" " " ⅞" USS 9 thread
Threaded for ¾" pipe thread ⅞" USS 9 thread

MELFRED FISHTAIL BITS

THE MELFRED FISHTAIL BITS are made of cast steel. The cutting edges are hard faced with Borium. Water circulation holes are drilled through the center, behind the cutting blade or in front of the cutting blade as specified by customer. When ordering, specify thread size.



MELFRED DRILL TUBING AND COUPLING—#301 DRILL TUBING is made of 1⅛" O.D. x 5/32" Wall Tubing complete with #301 coupling. Standard length is 20', special lengths to order. #401 can be welded to standard 1" pipe or ¾" extra heavy pipe or smaller tubing.

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In "Spectro-Matic" burner control, ROPER gives you another exclusive feature to strengthen your selling message. When combined with all the other outstanding ROPER benefits (including a 68-year reputation for top quality), "Spectro-matic" cooking becomes a highly-effective sales tool. Ask for the ROPER catalog, describing the complete line of brilliant new models for all gases. Write Dep't. G553 today.

GEO. D. ROPER CORPORATION • ROCKFORD, ILLINOIS
Offices and warehouses in principal distribution centers

of mid-April, pledges were close to the minimum of 60% of meters.) With the manufacturers chucking in $180,000, pipeliners contributing $150,000, and utilities putting up $155,000, close to a cool half-million per year is going for love.

Right here might be an appropriate spot to make one more brief pitch for the AGA plan. Bypassing the usual exhortations, let us point out that it would be a sad situation if the segment of the industry that has the most at stake —the utilities—should fail to rise to the occasion and have to lean on their manufacturer and supplier friends to do the job for them.

It's debatable whether the half-million would do a better job if it were to be dumped into a single kitty; and hardly worth the argument at this time, because it obviously won't be, at least for some time. The important thing is that the three segments keep their aims straight, and in harmony.

INGAA, perhaps, has spelled out the lesson better than the other two. It has concentrated a lot of energy on sewing up the slipping seams that bind the parts of the industry together. Its first job has been with the producers and royalty owners groups, and J. J. Hedrick, C. P. Rather, and Paul Kayser have worked hard on this—not only to explain the pipeline company story to a strong-willed group of rugged individuals, but also to try to correct admitted inequities in contract pricing practices. (Cleaning up one's own house is a very important function of public relations.) Mr. Rather put across an excellent story at the recent meeting of Texas Independent Producers & Royalty Owners Assn. in San Antonio, and while there's some question as to how many royalty owners he convinced, the mere fact that he was permitted in the hall can be counted for a good deal. INGAA's telling them straight, pulling no punches, and acknowledging the problems that exist—we like that.

For example, Mr. Rather agreed that there is a necessity for revising contracts where possible. "But give us," he said, "some basis for revising the contract solely to your advantage . . . an extension of time, new gas reserves, changes in minimum and maximum take . . . Put us in a position where we can justify the action we have taken to possible critics."

If such efforts as these bring results, and all hands join the crew and take off for the same destination, let them not forget to make plenty of room for their lone passenger—the consumer. It's his joyride, and may he ride in comfort. If he's not happy, neither will the crew be.

Ad help for smaller companies

Utilities that are not quite large enough to employ their own ad staffs and agencies, or to prepare special ads for local insertion, may now join in a cooperative scheme cooked up by Bozell & Jacobs, a nationally known agency.

The "BJ-Gas Company Ad & Mat" service offers ads keyed to the national AGA appliance promotion calendar on a subscription basis; also included are selected institutional ads. AGA's promotional and advertising staff is cooperating in furnishing information and assistance.

Two package plans are available: Plan 1 provides 13 ads per quarter or 52 ads per year; Plan 2 offers 9 ads per quarter, 36 per year.

. . . it had to happen!
NEW BUILDING,
NEW COMPANY NAME
HONORS THE INDUSTRY'S LEADING
GAS PRESSURE REGULATORS—
Thanks to you, our customers, we've grown out of our britches!! We've just completed a "2-pants" plant to handle your ever-growing needs for MAXITROL Gas Pressure Regulators.
In occupying the new plant we also adopted a new name — MAXITROL COMPANY — honoring the "star" of our show.
Our new and greater production, engineering and research facilities, and our increased personnel will set an even greater goal for MAXITROL achievements.
MAXITROL
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formerly
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Tomorrow, as yesterday, you may look to MAXITROL for engineering and imaginative leadership!
12200 BEECH ROAD • DETROIT 28, MICHIGAN
Sold on the Pacific Coast by: PACIFIC SCIENTIFIC CO.
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ASSOCIATIONS

Eacker reports on insurance to New England convention

Obtaining adequate liability insurance from American casualty insurance underwriters is "one of the more vexing problems" facing managements of gas utility companies, 777 attendants were told at the annual meeting of the New England Gas Assn. March 26-27 in Boston.

E. H. Eacker, president of Boston Consolidated Gas Co., went on to outline the steps being taken toward improvement of this situation that finds underwriters discontinuing coverage of gas utility companies. "One proposal . . . is that of establishing some sort of cost plus arrangement with American underwriters . . . Another . . . is the creation of an insurance pool within the gas industry itself . . . Neither . . . has the same high degree of desirability as that of gas companies being completely acceptable as excess liability risks by American casualty companies."

Excerpts from other addresses follow:

Martin J. Coughlin, Hartford (Conn.) Gas Co., "Budgets and Controls": "We can do better if we adopt sound management planning and control as part of our procedure." The Controller's Institute defines management planning and control as "'. . . The organization, techniques and procedures whereby long and short range plans are formulated, considered and approved; flexibility . . . is provided; deviations in operation are analyzed; and corrective action required to reach the desired objective is taken.'" Mr. Coughlin, quoting from *The Controller,* published by the Controller's Institute, reports that "management planning and control is often misunderstood" and is often looked upon as merely a forecast or guess for the future made for "guidance in checking cash resources. Its primary purpose, however, is to establish goals . . . whereby coordination and control . . . is secured and directed toward achievement of the specific goals."

Virgil L. Rankin, professor of public relations, Boston University, "Public Relations and Successful Management." "The general public . . . has admired executives for their ability as business mechanics" but "has lacked confidence in their abilities as economic leaders . . . due partly to the lack of a management philosophy that is generally known, understood, and accepted by executives and the public." "Public relations is not a commodity to be purchased by the yard . . ." "The country's corporations now fall within three categories: The benighted, the enlightened, and those who are in the twilight between because they want to do something but don't know what to do or how to do it."

"The first requirement in public relations communications is to have something good, sound, and worthwhile to communicate . . ." "Unless our employees are enthusiastic about what we do, they can neutralize our motives . . ."

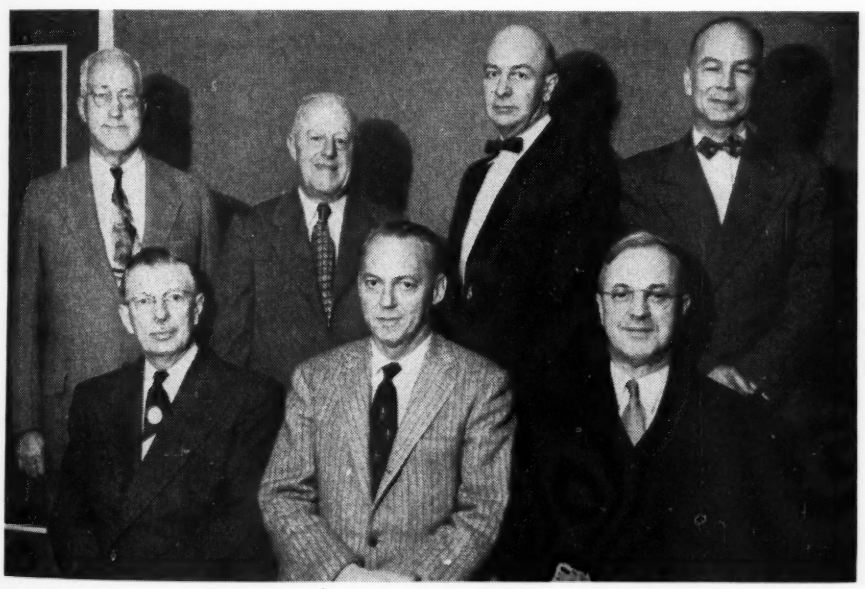
Presidents Frank C. Smith, AGA, and James F. Donnelly, GAMA, outlined the desirable results of association-utility cooperative action. In his address, "United For Action," Mr. Smith told of the "special services and benefit to our transmission company members (that) will be provided under the new arrangement" and that "it will be necessary to give consideration to the service requirements of producers of natural gas and owners of natural gas reserves. There is dire need for a united front of the whole gas industry."

In "Arm in Arm," Mr. Donnelly outlined the background of present appliance sales situation, presented the manufacturers' appraisal of the gas appliance business, and said that the "current sales situation calls for joint cooperative and complementary action."

Outgoing President Sherman R. Knapp, Connecticut Light & Power Co., in his talk "Value Received" from the NEGA, spoke of value as a tool for supervisory development, as a testing ground, and as a stimulant. Managing Director Clark Belden told of the association's growth, which shows a net increase in membership this year of 19 new member companies with a 94% net increase in company membership during the past seven years.

Two panel discussions were highlights of the convention. For "Operating Experiences with Natural Gas" see feature article in this issue. The panel on "Increasing Gas Sales" covered changed sales emphasis required by natural gas, promotion and advertising, merchandising, and manpower.

New officers elected at the convention are: Jesse L. Johnson, Providence (R. I.) Gas Co., president; Roy E. Wright, NEGEA Service Corp., Cambridge, 1st vice president; Harold E. Ayer, Lynn (Mass.) Gas & Electric Co., 2nd vice president; Otto Price, Boston (Mass.) Consolidated Gas Co., treasurer; and Clark Belden, managing director, NEGA, Boston, clerk.



1953-54 officers of the NEGA elected at the recent meeting are (front row, l. to r.): Jesse L. Johnson, president; Sherman R. Knapp, outgoing president; Roy E. Wright, 1st vice president. Back row, l. to r.: Gordon G. Howie, chairman of nominating committee; Otto Price, treasurer; Harold E. Ayer, 2nd vice president; Clark Belden, managing director.

Appliance improvements suggested at sales clinic

As a clinic at the AGA's 8th annual research and utilization conference held in Cleveland last month, "What I Would Like to See in Domestic Gas Appliances and Services" brought forth a wealth of suggestions from those participating.

From the housewife's viewpoint, Mary Louise Bohn, home service director of Laclede Gas Co., St. Louis, suggests for hot water heaters: remote controls, dual temperatures, and separate small high temperature gas units. Both Miss Bohn and J. W. Ferry, appliance manager of the May Co., Cleveland, offered suggested improvements for clothes dryers: single unit combination clothes washer and gas dryer; more efficient lint and moisture disposal; top opening instead of side; lower temperatures; easier access to lint traps; unexposed heating elements to eliminate odor of scorch burn from flying lint; lower competitive prices—gas vs. electricity; simplified humidity control; flush wall mountings; easier burner access. Miss Bohn would also like to see more attractive gas incinerators and more silent gas furnaces.

In the range department, Miss Bohn wants easier-to-clean top burners, covers over the pilot lights, top grates that fit into grooves, removable burner heads, and greater flexi-

bility in top burner adjustments. Mr. Ferry would like ranges to come fully equipped and assembled from the manufacturer and to have improved secondary air distribution for top burners, improved oven heat distribution, more insulation, and reduced heat at the back of the range.

In addition to his concrete appliance desires, Mr. Ferry is looking for firm distribution and marketing organizations, specialty selling organizations, standardization and shortening of lines permitting greater flexibility, and pricing by zones.

What J. G. White, superintendent of distribution of the Peoples Gas Light & Coke Co., Chicago, would like to see is "improvements in design and the use of best quality materials that will provide the utmost in safety and performance with a minimum amount of services required during the normal life of the appliances." He also calls for "improvements in accessibility that will permit the serviceman, when he is called in, to perform the necessary services with a minimum of difficulty and time."

Safety will highlight AGA production conference

With the spotlight on safety, the AGA's production and chemical conference will offer an outstanding program of luncheon conferences during the three-day meeting May 25-27 at the Hotel New Yorker, New York.

One luncheon conference on Tuesday, May 26, will be on carbonization and coke, with such topics as methods and materials for cleaning coke plant equipment, specialized protective coatings, increasing trends toward irregular coke oven operation, coke plant corrosion problems. In the "chemistry in the gas industry" conference, discussions will be held on natural gas problems at both ends of the pipeline, gas conditioning, automatic control in gas operations, odorization, catalytic reforming, and current investigations going on in the industry.

The L.P. gas luncheon conference will be on L.P. gas standby problems, industrial use of L.P. gas, current developments, and safety as practiced around the L.P. gas plant.

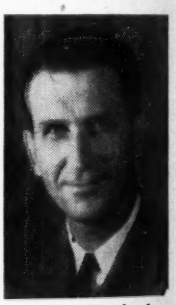
Safety in plant operation, utilization of natural gas pressure, jet compressors, potential difficulties of vapor phase gum with fuel bed reforming in mixed gas system, internal corrosion due to oxygen in plant equipment, and policies in connection with personnel in standby plants are topics to be covered at the water gas session.

Three luncheon sessions on Wednesday, May 27, will be on high Btu gas, oxygen in gas manufacture, and plant waste disposal.

In addition, general sessions will be held Monday morning and afternoon, May 25, and on Wednesday morning. On Tuesday, May 26, parallel sessions will be held for chemical and gas production sections.

"Natural Gas" premier set for Southern Gas meeting

A host of notable speakers, a distinguished senator, and a movie premier will be on the program for the 45th annual convention of the Southern Gas Assn. when it gets under way in New Orleans, May 11-13. Expected to be the biggest convention of the SGA, the affair will probably go over the 1800 mark in attendance.



J. H. Wimberly

Important sessions have been lined up for the various section meetings. The accident prevention forum will have Dr. Arthur Secord, supervisor of adult education in Brooklyn, N. Y., discussing "How to Tell Your Men What You Know," and well known leaders in the accident prevention field will discuss safety, supervisors' responsibilities and employee relations, and "Accident Prevention Is Good Business."

L. R. Pickup, Southern California Gas Co., Los Angeles, will evaluate plastic pipe at the distribution section meeting and periodic repair practices for domestic meters will be analyzed by L. A. Bickel of Lone Star Gas, Dallas. Panel discussions will be held on "Motor Vehicle Operation and Maintenance"

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*VIBRA-PAK ANODES

*PATENT APPLIED FOR

Standard Magnesium's new backfill packaging technique insures anode remaining centered in the chemicals regardless of shipping or handling.

For anodes with longer life and greater efficiency insist on Standard.

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TULSA, OKLAHOMA

Pioneers of: Spectographically Analyzed Anodes
Cylindrical Anodes

Another ◆ First . . .

TITAN TANKMASTER

WATER HEATER CONTROLS

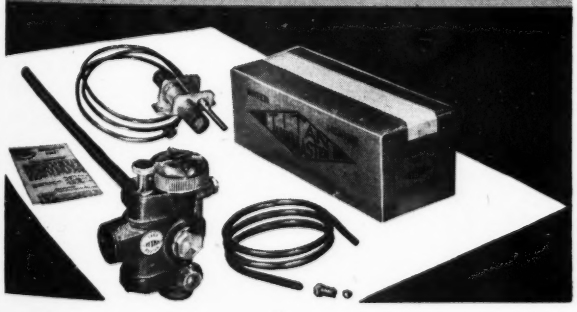
WITH

*Electro-Tin Finish

*Slight Extra Cost

TITAN TANKMASTER is supreme among water heater controls. Engineering perfection combined with precision production have created a control that is SIMPLE, SAFE, SURE AND ECONOMICAL IN GAS CONSUMPTION. Features include—Precision machined metal to metal valve and seat — Larger capacity — Improved Snap-Action mechanism with true snap-action from full close to full open and vice versa — Accurate thermostatic control — Safe lighting — 100% Safety pilot — AGA Listed — Furnished with or without pilot gas filter — and NOW Electro-Tin Finish.

Both Brass and Electro-Tin Finish TITAN TANKMASTERS are available in complete Installation Kits as illustrated below.



Always first in PERFORMANCE . . .

Now first in APPEARANCE!

With ELECTRO-TIN FINISH, TITAN TANKMASTERS have a strikingly new and thrilling beauty, easy upkeep and a trim and sleek style that blends harmoniously with gleaming snow white modern water heaters and home decor . . . . Since water heaters are now prominently placed in utility rooms and kitchens this improved appearance is a MUST.

Other **Electro-Tin Finish** advantages are — Its resistance to tarnish because it resists atmospheric fumes . . . It reduces rust and corrosion to a minimum . . . With the variety of chemicals in water in various parts of the country this protective coating prevents chemical reaction and assists as a safeguard to health — like the tin coating on a food container.

Insist on Titan Tankmaster Controls with **Electro-Tin Finish** . . . They are backed by a 20-year tradition of precision craftsmanship . . . Made for use with Natural, Manufactured and Bottled Gas.

THE TITAN VALVE & MANUFACTURING COMPANY

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and "Practical Service Training Programs in Operation."

During the transmission session, Frank Williams, Taylor Forge & Pipe Works Co., and F. A. Hough, Southern Counties Gas, Los Angeles, will lead a discussion on developments of piping code, ASA B.31. George C. Cooper, Mississippi River Fuel Corp.; George White, Tennessee Gas Transmission Co.; and E. A. Walsh, El Paso Natural Gas Co., will lead another session on "Experiences of Gas Turbine-Centrifugal Compressor Operations."

At the Wednesday morning general session (May 13), the new SGA motion picture, "Natural Gas," will be premiered. Also tentatively scheduled is an address by Sen. Everett M. Dirksen (R.-Ill.).

President John H. Wimberly will give his president's address at the May 12 general session.

Load problem discussed at utilities meeting in Tulsa

The demand for natural gas has not yet reached the saturation point, attendants at the recent Oklahoma Utilities Assn. were told. But, said Robert W. Hendee, president of the International Gas Union and of Colorado Interstate Gas Co., the load factor problem of the pipeline has been added to by increased demands for gas for househeating and in order to raise the load factor, other markets in the low priced, interruptible field must be found. And, in order to meet the resulting peaks, extra line capacity, peak shaving, or storage must be provided.

Securing pipe, equipment and money, certificates of convenience and necessity, and a fair rate of return are major problems that will have to be solved in order for the growth of the gas industry to continue at its present pace.

Construction expenditures for the gas and electric industries were about $2½ to $4 billion from 1948 through 1952, with 1953 expenditures estimated at $4 billion, according to Joseph Bowes, Oklahoma Natural Gas Co., making public utilities one of the best investment mediums. During 1952, electric, water and gas companies raised approximately $2¾ billion, accounting for one-quarter of all corporate financing that year.

Other speakers included B. L. England, president of the Edison Electric Institute; Theron W. Locke, utility analyst for Goodbody & Co.; Richard L. Arnold, Southwestern Gas & Electric Co., speaking on "Recent Developments Affecting Federal Power Agencies"; and S. D. Kennedy, Oklahoma Gas & Electric Co., speaking on "Our Public Relations Challenge."

W. R. Wolfe, Oklahoma Gas & Electric, president of OUA, was convention chairman and presided at the meeting, which had an attendance of 340. The 1954 annual convention of the association will be held March 25-26 in Oklahoma City.

Gas industry's obligations cited by Midwest president

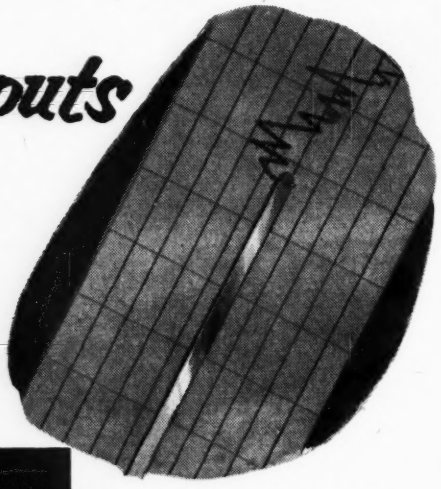
Obligations of the gas industry to the communities it serves were pointed out to attendants at the recent Colorado Springs convention of the Midwest Gas Assn. when outgoing president, Amos H. Abbott, stressed "adequate facilities for gas supply, realistic continuity of service, improvements for public safety, and intensified programs of appliance selling."

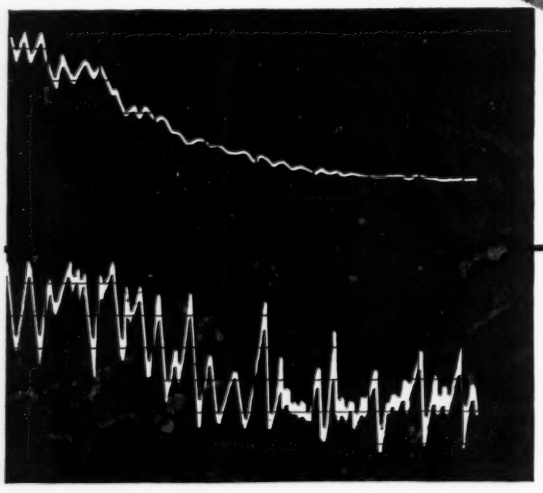
That the demand for gas can be met is shown when "annually discovered reserves continue to exceed withdrawals and geologists tell us that still more unproven reserves are in sight . . . With the proper price incentive, I am sure producers will find this gas" and pipelines will be built to transport it.

Continuity of service can be maintained and "We should look . . . toward practices and equipment" that will guarantee it. Mr. Abbott suggested that more emphasis be placed on the engineering and construction of supply lines "that will not fail." He asked that consideration be given to the duplication of lines to and from border stations and to standby facilities. "There must be more than reasonable assurance that the gas supply will not fail . . ."

What seemed like good practices a few years ago "should now be criticized" in meeting the public safety obligation. "We must analyze . . . every piece of new construction,

Lancaster puts the finger on friction





Cardiograph Reading On New Lancaster Metal Rim Diaphragm indicates no points of excess friction—uniform distribution of leather, perfect alignment of center pans, ideal weight and stiffness of leather, and proper amount of oil in leather.

Cardiograph Reading On New Diaphragm of Another Make (as received in proof) indicates excess friction. If installed in this condition, diaphragm would come in from 5% to 10% fast. (Diaphragm was later found to have non-uniform distribution of leather and center pans improperly aligned.)

The new cardiograph, recently designed in our development laboratories, opens the way for new engineering improvements in gas meter diaphragm design and construction. It is typical of Lancaster's leadership.

Accurately checking differential of pressure under actual meter operating conditions, Lancaster's new cardiograph puts the finger on flaws even when the meter is in proof. Excessive wrinkles in leather, uneven diaphragm, off center pans, collapsed diaphragm, excessive oiling and other factors influencing diaphragm performance show up on the graph.

Compare the above graphs and you'll see why the quality features of Lancaster Metal Rim Diaphragms are so important for friction-free meter performance and longer service life.

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SERVEL tells millions to air condition with GAS!

NOW! Complete home heating, cooling, air conditioning with one unit at a price almost anyone can afford!
Servel All-Year air conditioner at a new low price...
little more than the price of a heating system alone!
Gives you all seven air conditioning benefits
*Big-home Size
$1395.00
DELIVERED
Servel
the name to watch for great advances in
AIR CONDITIONING √ REFRIGERATION

For you this means all-year load!

Watch for sellective Servel advertising in these publications reaching millions of prospective customers:

Time • Saturday Evening Post • Better Homes & Gardens
The American Home • House Beautiful • House & Garden
Sunset • House Beautiful Maintenance & Building Manual
House & Garden Book of Building • Small Homes Guide

This is the year *All-Year* Air Conditioning comes into its own!

And Servel is building demand with the greatest advertising and merchandising push in air-conditioning history.

No need to dump gas at seasonal low industrial rates! Every Servel unit on your lines means you sell more gas at higher rates, boost your net, level off peaks and valleys of seasonal gas demands, avoid "dumping."

Take advantage of Servel's "Big Push" . . . get in on the ground floor right *now*. Servel has the advertising and merchandising tools for you to tie in with this national advertising program. Contact your nearest Servel distributor or mail coupon for complete information. *Do it now!*

Servel

the name to watch for great advances in

AIR CONDITIONING √ REFRIGERATION

SERVEL, INC., Dept. G-5, Evansville 20, Indiana

Tell me more about the Servel "Big Push," and rush information on tie-in advertising-merchandising.

Name_____

Firm_____

Address_____

City_____ State_____

KRALOY
PIPE & FITTINGS

COMPLETE
DISTRIBUTION SYSTEMS

MAINS, SERVICE TEES, SERVICES

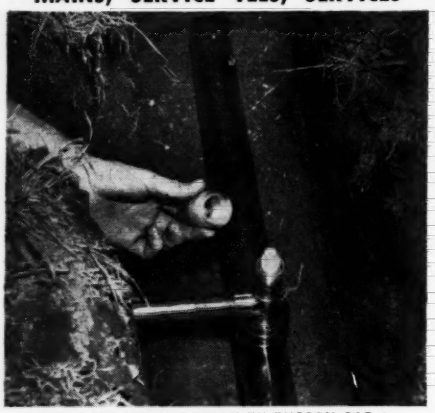


PHOTO OF INSTALLATION BY TUCSON GAS & ELECTRIC CO., TUCSON, ARIZONA

No Corrosion!

Kraloy will not rust, is impervious to all types of soils, and is not subject to galvanic corrosion.

Low-Cost Installation

No welding or field wrapping is necessary. Installations are simple, rapid, inexpensive.

No Maintenance

Properly installed Kraloy systems eliminate all maintenance causes except damage by excavating equipment.

★**LIGHT-WEIGHT.** Easier to handle. 8 times lighter than steel, 15 times lighter than copper.

★**TRANSPARENT.** Permits visual inspection of joints.

★**GREATER CARRYING CAPACITY.** Smooth, frictionless. Can carry 20% more than steel pipe.

★**FASTEST REPLACEMENT** for corroded steel service. Kraloy pipe can be inserted in old steel services.

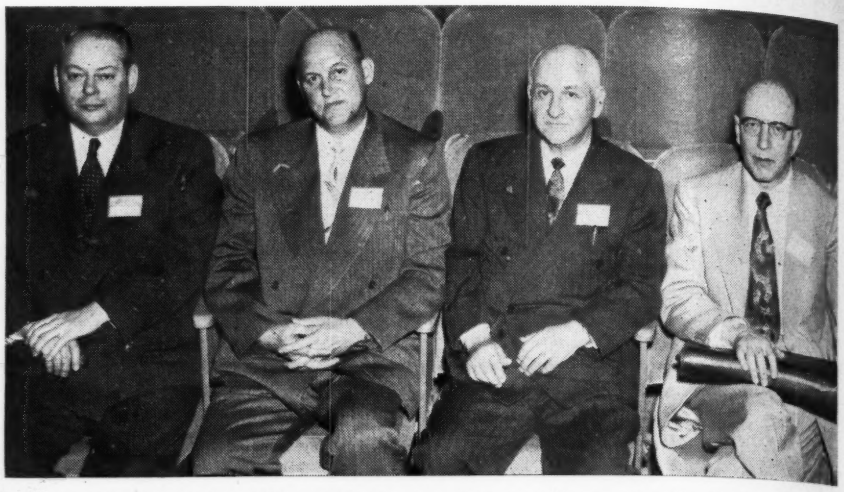
Kraloy is the most experienced manufacturer of plastic pipe and fittings for the gas industry. Over 3 million feet of Kraloy in use by prominent gas utilities.

STOCKED BY
Crane Co. • Mid-Continent Supply Co. National Supply Co. • HOMCO • Republic Supply Co. of Calif. • Mine Supply Co.

Write for technical data and installation details

Kraloy Plastic Pipe Co., Inc.
4710 East Washington Boulevard
Los Angeles 22, California
Gentlemen: Please send me complete information on Kraloy Pipe and Fittings.

NAME_____
FIRM_____
STREET_____
CITY_____ ZONE____ STATE_____



Officers elected at the Midwest Gas convention are (l. to r.): M. K. Wrench, vice president; M. B. Cunningham, 1st vice president; Everett Baxter, president; Harold Peckham, secretary-treasurer.

every repair, the present condition of our facilities and operating procedures . . . Customers should be advised of the condition of their equipment. I have difficulty going along with the idea that such is not the concern of the gas supplier. Our revenues should contemplate improved public safety."

With regard to appliance selling, Mr. Abbott believes that the utility must not only promote selling to newly connected customers, but "of even more importance" must consider the replacement of old appliances.

Pointing out that "At the present time only one domestic insurance company in America will write re-insurance at adequate limits for the gas industry," Alfred L. Dowden, Liberty Mutual Insurance Co., attributed this to the industry's safety habits. The gas company cannot dismiss its responsibility at the property line. "The (insurance) situation has become such that the insurance industry . . . does not feel that the gas industry . . . is a desirable risk as far as public liability is concerned."

The major problems affecting the industry were outlined and discussed by Robert W. Hendee, Colorado Interstate Gas Co., as (1) keeping pace with growing market demands; (2) securing certificates of convenience and necessity; and (3) determining rates and a fair rate of return.

Other speakers at the convention, which had an attendance of more than 350, were AGA President Frank C. Smith speaking on "United for Action," and GAMA President James F. Donnelly, "Arm in Arm."

Sales talks and special sales demonstrations on superiority of gas cooking, hot water heaters, and incinerators were also on the program.

New officers of the association are Everett E. Baxter, Central Electric & Gas Co., Lincoln, Neb., president; M. B. Cunningham, Iowa Power & Light Co., Des Moines, 1st vice president; M. K. Wrench, Metropolitan Utilities District, Omaha, 2nd vice president. Harold E. Peckham, Northern States Power Co., St. Paul, Minn., was re-elected secretary-treasurer.

Growth of NACE revealed at ninth annual conference

Walter F. Rogers, Gulf Oil Corp., Houston, was elected president of the National Assn. of Corrosion Engineers during the group's ninth annual conference and exhibition at the Sherman hotel, Chicago, in March. Aaron J. Wachter, Shell Development Co., Emeryville, Calif., became vice president, and R. A. Brannon, Humble Pipe Line Co., Houston, incumbent treasurer, began his third year in office.

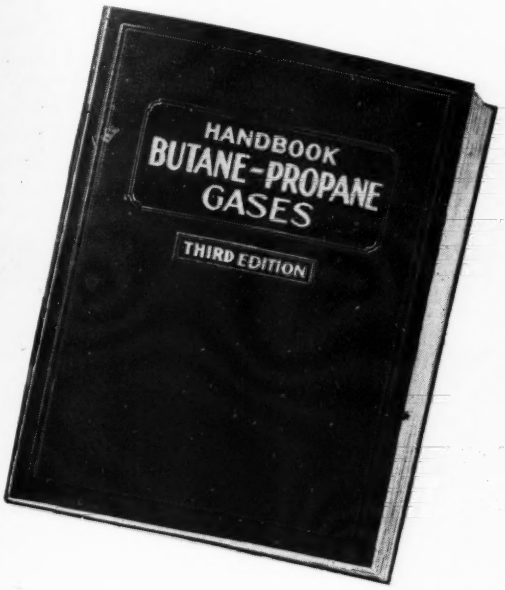
Significant evidence of the association's growth was shown in reports of officers and standing committee heads. It was predicted that there would be 34 organized sections of NACE, an increase of eight sections during the preceding 12 months. Four of the new sections are in Canada, where membership has more than trebled in a year.

NACE-sponsored activities during the past year include the compilation of a glossary of corrosion terminology and definitions. The association will participate in a short course on corrosion scheduled to be given by the University of California. The editorial review committee has taken steps to further speed the review of technical manuscripts presented for publication in *Corrosion*, the association's monthly magazine.

Featured on the technical side of the program were papers of interest to the pipeline industry, composed of three discussion sessions and one symposium of prepared papers. "Laboratory Methods for the Evaluation of Inhibitors for Use in Oil and Gas Wells" was presented by E. C. Greco, United Gas Corp., Shreveport, and J. C. Spalding, Sun Oil Co., Dallas. "Corrosion in Sweet Oil Wells" was the topic of Howard E. Greenwell's talk, and Jack L. Battle discussed "Corrosion of Casing in Oil and Gas Wells."

In all, 41 papers in nine symposia were presented and four discussions were scheduled. Among innovations at this year's meeting were three educational lectures and a round table discussion on refinery corrosion.

The Only Complete Reference Book on Liquefied Gas Engineering, Installation and Operation



352 PAGES of Technical Facts, Charts, Diagrams, Photographs, Including Latest Processes and Materials.

CONTENTS

PART 1. Introduction
The Progress of the Industry
The ABC of L. P. Gas

PART 2. Physical and Chemical Properties
Properties of the Hydrocarbons in L. P. Gas
Properties of Butane-Propane Mixtures
Volume Correction Factors
Analytical Determination and Testing
Fire Protection and Control

PART 3. Production of L. P. Gas
Natural Gasoline Plants, Recycling Plants, Oil Refineries

PART 4. Transportation and Storage
Delivery by Truck, Rail, Water, and Pipe Line
Storage Tank and Pressure Vessel Design
Liquid Metering and Pumping Systems

PART 5. Distribution of L. P. Gas
Installing and Servicing L. P. Gas Systems
Semi-Bulk Systems
Bottled Gas Systems
Gas Utility Service from Central Plants
Multiple Utility Service from a Central Plant

PART 6. Utilization of L. P. Gas
Comparative Performance With Other Fuels
Appliance Installations and Testing
Domestic Applications
Commercial Applications
Industrial Applications
Enrichment, Peak Load, and Standby Uses
A Fuel for Internal Combustion Engines

PART 7. Regulations
N.B.F.U. Pamphlet No. 58
Motor Carrier Tariff No. 7
Freight Tariff No. 4
Unloading from Railroad Tank Cars
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PART 8. Appendix
Interchangeability of Other Fuel Gases with Natural Gas
L. P. Gas Insurance
Handy Tables for Field Use
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$7.50 Per Copy

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Orders from individuals must be accompanied by amount of purchase unless credit has been established.

SEND ORDER TO GAS

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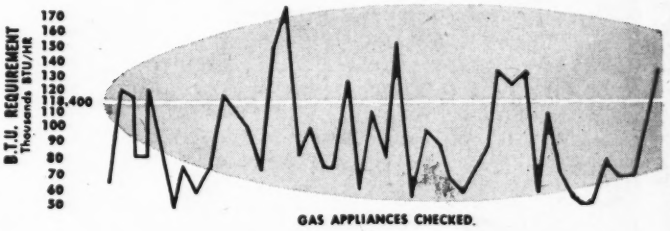
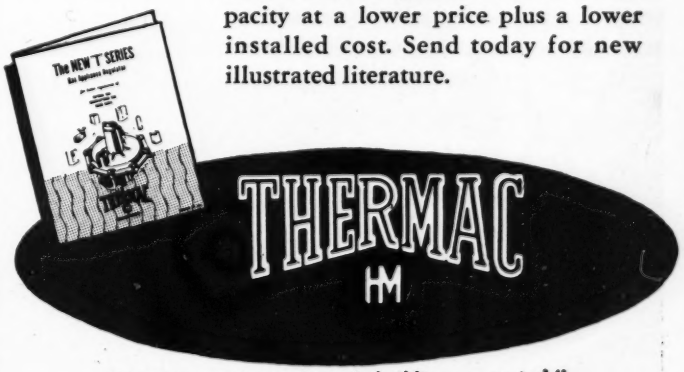
CHECK THIS FOR SIZE

Greater BTU capacity per size, extremely accurate pressure control plus a lower cost unit are outstanding advantages of Thermac Regulators Take the new ½" "T"Series for example. This regulator with a capacity of 118,400 BTU measures only 3-9/16" in width. Other sizes are proportional ranging in capacity from 9000 to 1,398,600 BTU.

Scores of appliances produced by American manufacturers as charted below actually determined the specific sizes of our various models. In other words, we built a regulator to meet appliance requirements, something seldom done.



The octagonal shape makes installations in tight spots a cinch. We have also added vise grip bosses to aid assembly. Then too, the cover vent may be tapped to receive your particular connection thereby eliminating need for extra fittings. In the new "T" series you have a small regulator with more capacity at a lower price plus a lower installed cost. Send today for new illustrated literature.



"Over 20 years' experience in building gas controls"

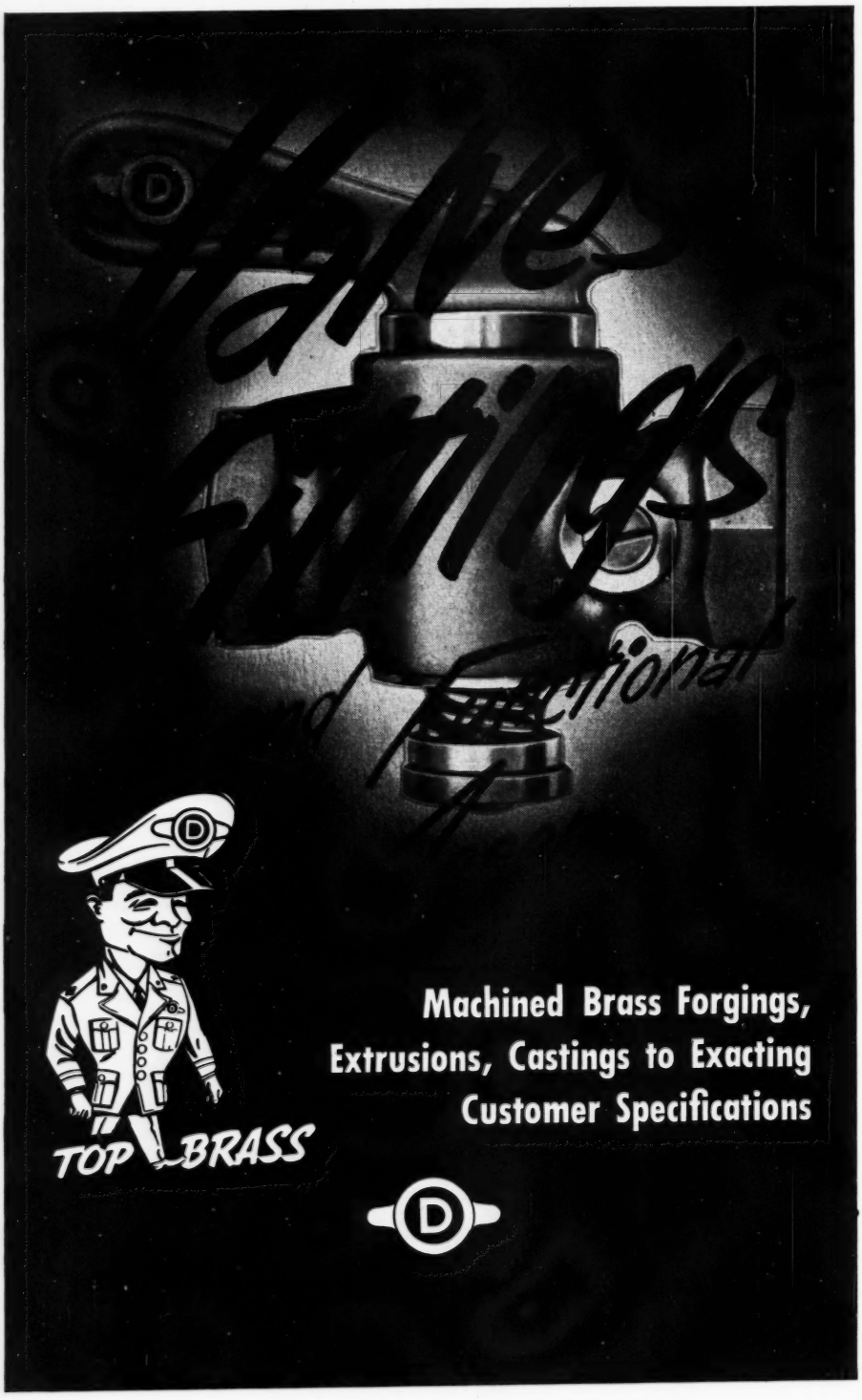
Sales lethargy depicted in skits at Denver meeting

To try to awaken plumbers, heating contractors, and other dealers to a better realization of the opportunities to sell profitable merchandise when taking orders for plumbing and heating equipment and making repairs, was the object of a recent meeting of the Rocky Mountain Gas Assn. held in Denver.

The meeting, devoted to gas clothes dryers, consisted of two skits: One depicted a typical non-merchandising-conscious plumber who neglects a splendid opportunity to add a clothes dryer to his customer's order; during a brief absence, his office girl goes ahead and sells the cusomer.

The other skit was "Over the Back Fence," in which two members of the association portray housewives harrassed by dust storms, ashes from adjacent pits, snow, rain, mud, and wind while trying to hang large baskets of clothes on the clothes lines.

In addition to the skits, a sound movie, "The Importance of Selling," was presented by the Denver Sales Executives Assn., and a talk entitled "A New Source of Revenue for Plumbers, Heating Contractors, and Retail Stores of Denver" was given by Philip A. Marelon, chairman, wholesalers clothes dryer promotion committee of Denver.

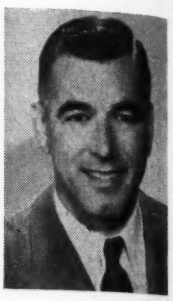


People

Promotions

On July 1, J. LESLIE HART, now western sales manager in Chicago for United States Pipe & Foundry Co., will assume duties as eastern sales manager with headquarters in Burlington, N. J. P. KING FARRINGTON, assistant Pacific Coast sales manager, will succeed Mr. Hart as western sales manager.

J. L. Hart



P. K. Farrington

LOUIS F. FRAZZA has been promoted to staff manager of the Transite Pipe department at division headquarters of Johns-Manville Corp., New York.

HENRY P. NEHER JR. is now assistant manager of the central staff sales department of Koppers Co. Inc., Pittsburgh. THOMAS H. CABLE succeeds Mr. Neher as manager of the sales methods section, and GEORGE C. MILLER becomes manager of international product sales section, Mr. Cable's former position. Koppers' also announces the appointment of DONALD L. DEVRIES as manager of the precipitator department of the metal products division.

H. RICHARD NIELSEN has been named sales manager of the air conditioning division of Servel. He will be succeeded as southern regional sales manager by NILS D. SELLMAN. The Evansville, Ind., firm also announced the appointment of C. A. STOCKHOFF as southwestern public utility manager. With headquarters in Dallas, he will cover Wyoming, Colorado, Kansas, New Mexico, Oklahoma, and Texas.

The combining of Allis-Chalmers' district and branch office territories of Denver, Salt Like City, Phoenix, El Paso, and Spokane into the Rocky Mountain region has been announced. RICHARD D. MOODY, since 1950 manager of the Los Angeles district office, has been appointed manager of the new region. RICHARD L. ENGEL succeeds him in the Los Angeles office.

F. S. CORNELL has been named executive assistant to the president of the A. O. Smith Corp., Milwaukee, and will continue as manager of the Permaglas heating division. The four-man committee of department heads who will administer the new Kankakee oper-

ations are: R. S. FRIEND, works manager; W. W. HIGGINS, chief engineer; S. E. WOLKENHEIM, general sales manager; and D. J. O'CONNEL, business administration.

Creation of two new zones by the A. O. Smith Corp. at Indianapolis and Kansas City, Mo., has brought about several changes. R. J. ULVESTAD becomes sales manager at Kansas City; G. C. SPRATT becomes zone manager in Indianapolis; G. G. FOHEY, heating specialist in the North Central district.

Recent Eureka Williams Corp. appointments include naming MAX NORTON as manager of dealer-sales relations and DONALD F. MOTZ as product manager of the Williams division. Mr. Norton was recently assistant to the general sales manager.

Max Norton
Eureka Williams

F. H. Finn
New York State

FENTON H. FINN, president of New York State Natural Gas Corp., Pittsburgh, recently was elected a director of Consolidated Natural Gas Co., New York's parent. Mr. Finn has been with the Consolidated system since 1932.

With the retirement of WILLIAM J. PEAD JR. as consulting and chief engineer of the Quebec Hydro-Electric Commission, THOMAS E. CROSS became chief engineer. CONRAD LAVERDURE replaces Mr. Cross as assistant chief engineer. JEAN LEROUX was named engineer of the gas department's planning and development division and RENAUD CYR and FRANK MAFFEI were appointed assistant to the superintendent and assistant supervisor, respectively, of its construction and maintenance division.

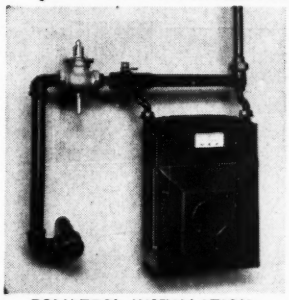
R. E. HORTON has been appointed manager of all Bryant Heater Div. branch office operations, with headquarters in Cleveland. At the same time, the company named M. J. FORTIER to succeed Mr. Horton as manager of the Bryant St. Louis branch.

R. E. Horton

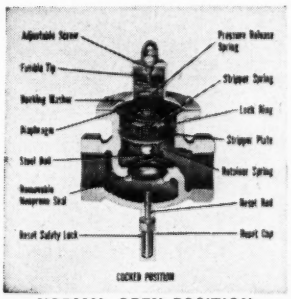
M. J. Fortier

"The Handley-Brown POLY-TROL SAFETY SHUT-OFF VALVE* means *New Gas Safety*"

Utilities Engineers Say and they say it with orders. Field proven installations have led to orders in state after state



POLY-TROL INSTALLATION ON DOMESTIC METER



NORMAL OPEN POSITION

POLY-TROL SOLVES TWO MAJOR PROBLEMS OVER-PRESSURE AND EXCESSIVE TEMPERATURE

Over-pressure in the line drops the ball instantly, shuts off service completely and *automatically.* Poly-Trol doesn't stop there; a temperature of 200° Fahrenheit also actuates it, service is cut off completely and *automatically.* Regardless of damage to the meter, no gas can escape. Reset in seconds to continue guarding life and property.

Poly-Trol is quickly and easily installed directly ahead of the meter on any natural gas service. No time consuming cutting of pipes or other costly changes necessary. Result—maximum protection at minimum cost.

High Pressure Service Protection . . . protect your customers served directly from high pressure transmission lines. Installed in conjunction with the service regulator at the property line, the model HP Poly-Trol guards against this special over-pressuring problem.

**Trade Mark—Patent Applied For*

If you haven't seen Poly-Trol in action, ask us to have our local representative arrange a convincing demonstration in your office.

HANDLEY-BROWN HEATER CO.

2503 BROOKLYN RD. • JACKSON, MICH.

Sharples Chemicals Inc., Philadelphia, has assigned RICHARD N. WILLIAMS to its Chicago regional sales office and DONALD C. WATERMAN to the Sharples New York regional office.

DR. JOHN A. HIPPLE, chief of the atomic section, National Bureau of Standards, Washintgon, D. C., has been named director of the Mineral Industries Experiment Station at Pennsylvania State College, succeeding DR. ALFRED W. GAUGER, who retired recently.

RONALD S. MCMURRAY has rejoined the sales staff of the Norton-McMurray Manufacturing Co., Chicago, after spending 22 months in the Navy.

R. S. McMurray
Norton-McMurray

H. Karl Merker
Brooklyn Union

Samuel Green

A. D. Harrison
Brooklyn Union

Recently elevated officers of Brooklyn (N. Y.) Union Gas Co. include SAMUEL GREEN, vice president and chief engineer; A. DUDLEY HARRISON, assistant vice president; and H. KARL MERKER, operating engineer.

W. F. TEAGUE has been appointed sales manager of the industrial products division of the Gustin-Bacon Manufacturing Co., Kansas City, Mo.

EARL B. SNELL, controller, has been elected to the board of directors and HENRY V. LINDEMAN vice president in charge of operations of the Bridgeport (Conn.) Gas Light Co.

H. P. MUELLER JR. and F. J. NUNLIST JR. have been appointed vice presidents of the L. J. Mueller Furnace Co., Milwaukee. H. D. WIRTH, former comptroller, was named secretary of the company. New director of Mueller is WILLIAM H. BRAND.

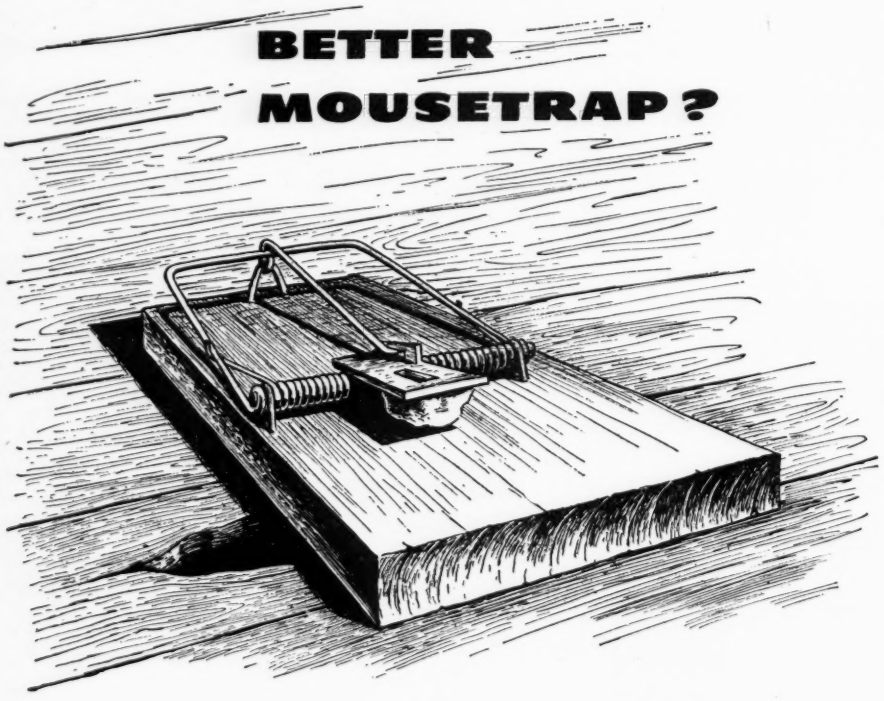
Dearborn Chemical Co., Chicago, has promoted J. F. WILKES to the post of director of research and product development. He recently served as technical director of the railroad department.

New California appointments in the Oil Well Supply Div. of U. S. Steel Corp. are REX MALONE, district representative, and FRED L. WILKINSON, manager of the Long Beach store.

Three major promotions in the sales division of Detroit-Michigan Stove Co. have been made. PAUL INSKEEP is director of sales, succeeding L. E. CLANCY, who has resigned. MILTON W. ELERT succeeds Mr. Inskeep as sales manager and JACK BELANGER succeeds Mr. Elert as assistant sales manager. The company has also named C. M. JEWELL special sales representative.

The A. O. Smith Corp., Milwaukee, has appointed GEORGE M. GRAETZ manager of the new eastern plant of its welding products division, now under construction at Lancaster, Pa.

The new staff post of general sales manager of Blaw-Knox Co., Pittsburgh, is being filled by WILLIAM RODGERS. In his new position, Mr. Rodgers will coordinate sales activities of all company divisions as well as assist in developing sales objectives, policies, and programs.



The story of the reward for a better mousetrap is proverbial. But the fact remains that most mice are still caught by this simple, economical and effective contraption.

Gas purification is a parallel case.

Iron Sponge, preferred for the removal of H_2S seventy-five years ago, is still preferred today. And for these same reasons . . . simplicity, economy and effectiveness.

Iron Sponge operates with high efficiency at high or low pressures, has excellent capacity and activity, gives long service between foulings and is simply and quickly regenerated.

CONNELLY Inc.

William Rodgers
Blaw-Knox

W. G. Adair
Empire Stove

WILLIAM G. ADAIR has been promoted to branch manager of Empire Stove Co.'s Oklahoma and southern Kansas territory with headquarters in Oklahoma City. He was formerly advertising manager for Empire.

HAROLD CORNWELL has been promoted to business promotion manager of the Athens, Ohio, district of Ohio Fuel Gas Co. The company also announced the promotion of BURDETTE M. KING to assistant superintendent of the compressor department.

Alabama Gas Corp., Birmingham, has elected J. N. GREENE chairman of the board; H. R. DERRICK, president; R. A. PURYEAR JR., vice president, operations. N. R. KERREDGE, R. C. WIRTZ, P. E. BEHR, and W. H. KENNEDY were each re-elected assistant secretary and assistant treasurer. New directors are JAMES GLENN HALL, HARRY H. PRITCHETT, and ARTHUR H. LEE.

William Hill
Caloric Stove

Bill Scully
Norwalk Valve

WILLIAM HILL is now manager of the Middle Atlantic division of the Caloric Stove Corp., Topton, Pa. He will direct divisional sales activities from his headquarters in Washintgon, D. C.

Transfers

BILL SCULLY has returned to his former position as sales manager with Norwalk Valve Co. in South Norwalk, Conn. In recent years, he has been with Consolidated Edison Co. of New York and with several manufacturers of gas equipment.

General Controls Co., Glendale, Calif., has appointed ROBERT M. JOHNSON as southern California sales manager. He comes to General Controls from Payne Furnace Div. The company has also announced that

CLEVELAND *Baby Diggers*

"The Gas Industry's Trenchers"

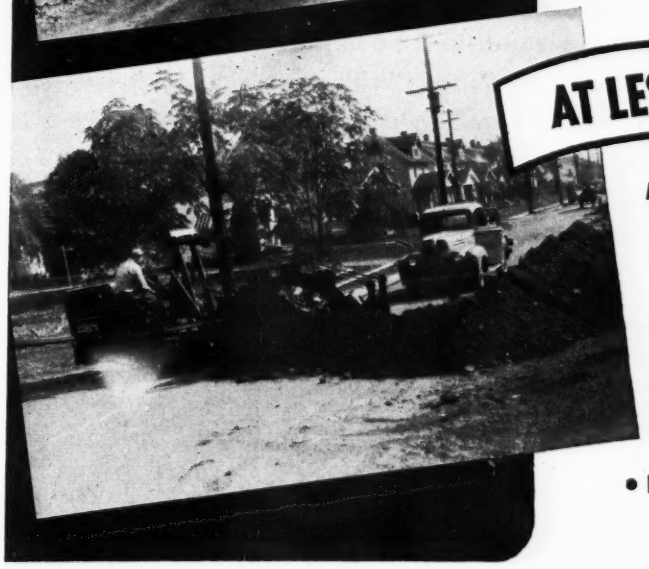
—for over 30 years

MORE TRENCH

- 4-Speed Main Transmission
- Wheel-Type—Fastest Digging Method
- 12-Speed Crawler Transmission
- Wider Range of Trench sizes
- Generously Powered

IN MORE PLACES

- Compact—Less Than 60" Wide
- Full-Crawler Mounting—Completely Maneuverable
- Fast Boom Hoist
- Shiftable Conveyor
- Truck-Speed Portability—Safer, *Faster* Job Moves



AT LESS COST

- *One* Machine for Mains *and* Services
- Digs All Soils in All Weathers
- Less Property Damage—Crawlers Save Lawns, Walks, etc.
- Unit-Type Construction
- Lower Maintenance Costs
- Longer Life

Get the full story on CLEVELANDS from your local distributor

THE CLEVELAND TRENCHER CO.

Pioneer of the Modern Trencher

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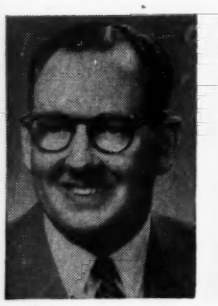


R. M. Johnson

L. Schnall

LEONARD SCHNALL is now heading a new field sales and service office in Syracuse, N. Y.

VIRGINIA MARIE JONES, former supervisor in the home service department of Equitable Gas Co., Pittsburgh, is the new director of home economics for Calgon Inc., Pittsburgh.

MARY GRACE CLARK has joined the home service department of Hamilton Manufacturing Co., Two Rivers, Wis. Miss Clark was district director of home economics for Ohio Fuel Gas Co., Mansville, Ohio, since 1949.

EDWARD C. HEMES is president of Duroflex Inc., a new firm that will produce synthetic diaphragms and coated fabric products. Associated with the new Buena Vista, Va., company as production manager of the diaphragm department is HUBERT E. FRANCIS. Mr. Hemes was formerly executive vice president and a member of the board of directors of Vulcan Rubber Products Inc.

Honors

Friends and business associates honored ANSEL B. HUYCK recently on the occasion of his retirement as a vice president of Brooklyn (N. Y.) Union Gas Co. Mr. Huyck started his BU career as assistant superintendent of the coke oven plant at Greenpoint works and rose from there to his present position.

Among seven consultants named by President Eisenhower to the National Security Council, top policy-making group for foreign affairs and national defense, is JAMES B. BLACK, president of Pacific Gas & Electric Co., San Francisco.

MARY E. HUCK, general home service director of Ohio Fuel Gas Co., Columbus, was named president-elect of the Ohio Home Economics Assn.

Deaths

R. L. O'Brien

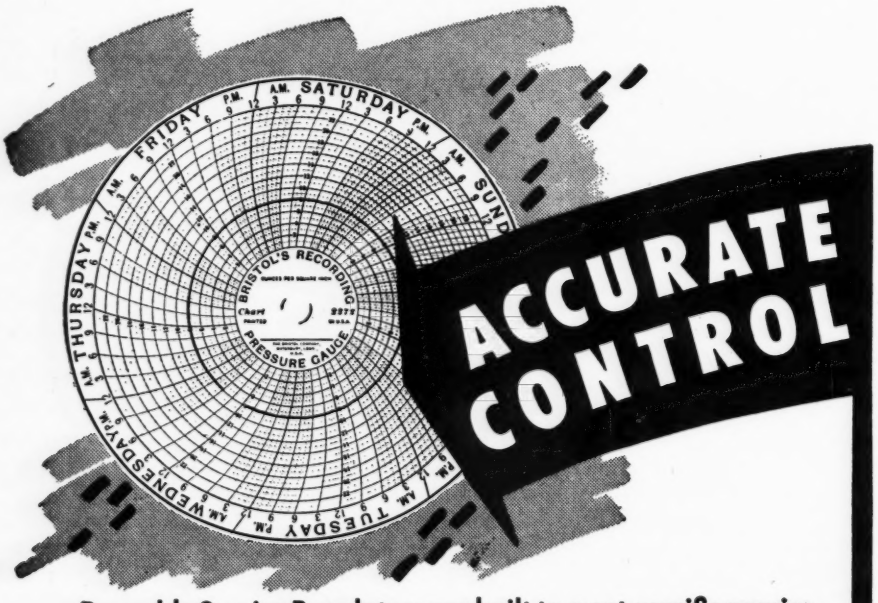
RAYMOND L. O'BRIEN, president and general manager of the Detroit Brass & Malleable Co. and for years a prominent figure in the gas industry, died suddenly March 24 while on a business trip in New York. Mr. O'Brien was instrumental in furthering the standardization of gas appliance components and served as chairman of the AGA's gas valve division for 10 years. He was a member of the board of directors of GAMA for 15 years, and for the past six years was chairman of the advisory council and chairman of the nominating committee. He was also a master in the Gild of Ancient Supplers.

J. S. WHITCOMB, vice chairman of the board of Detroit Brass, has succeeded Mr. O'Brien as president.

WALLACE G. MURFIT, director of public relations and manager of district offices of the Philadelphia Gas Works Div., UGI, died recently. He had been with the utility for 35 years.

JAMES R. ABERCROMBIE, 74, retired treasurer and director of the Gas Service Co., Kansas City, Mo., died recently. Mr. Abercrombie, who retired from Gas Service in 1950, had been associated with Cities Service companies since 1916.

ARTHUR G. KORNITZ, 38, wholesale sales manager and educational director for the controls division of the Perfex Corp., died in March.



Reynolds Service Regulators are built to meet specific requirements — years of operation in the field through a complete range of operating conditions have proved not only their superiority but their durability. With parts so precisely machined for each model that they are completely interchangeable. The accuracy you require in performance is assured.

MODEL 10

Dead Weight or Spring Type, with or without Mercury Seal, or Dead Weight Safety Seal or diaphragm operated relief valve. All working parts are so accessible as to be interchangeable without removal from pipe line.

MODEL 20

Dead Weight or Spring Type, with or without Mercury Seal, or Dead Weight Safety Seal or diaphragm operated relief valve. All working parts are so accurate as to permit complete interchangeability in shop.

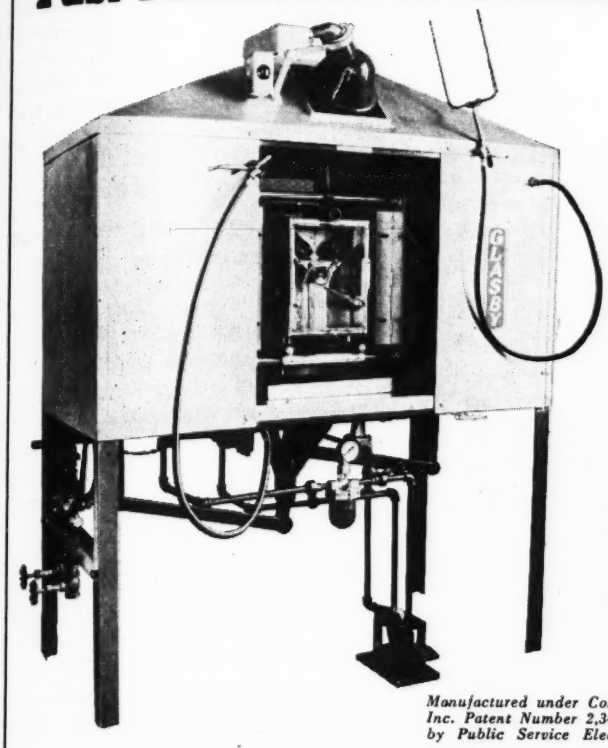
MODEL 30

For horizontal or vertical connections, with or without removable valve pocket. Available with either Spring or Dead Weight adjustment. With or without Mercury or Dead Weight Safety Seal or diaphragm operated relief valve.

Reynolds Gas Regulator Co.
ANDERSON, INDIANA, U. S. A.

GAS CONTROL SINCE 1892

Fast Production on Precision Meter Repairs



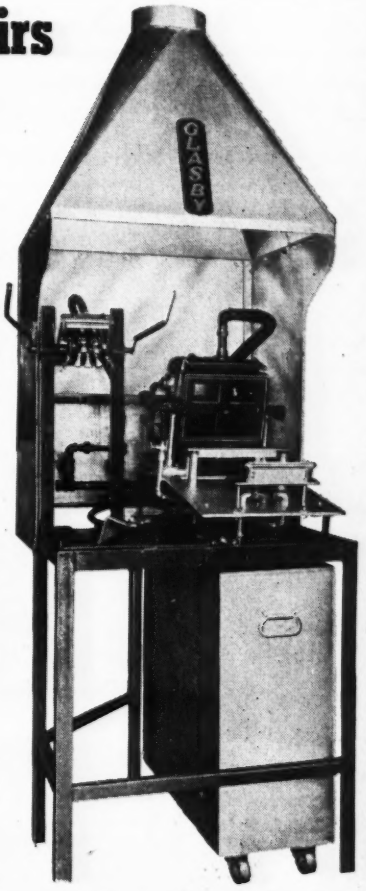
Minimum Repair Time Means Maximum Dollar Savings

← Meter Front and Back Removing Machine

This machine removes the front and back from gas meters in a fraction of the time previously required thus facilitating repair of diaphragms. Two models available — 5 light meter and 10 light meter capacity. Both models are adjustable to most makes of meters and feature additional safety devices to protect the operator.

Meter Top and Valve Box Cover Removing Machine →

This machine facilitates the removal of meter tops and valve box covers to minimize the time-consuming problems of meter repair operation. Available in 5 light meter and 10 light meter sizes, both adjustable to most makes of meters. Both models feature devices for the safety of the operator.



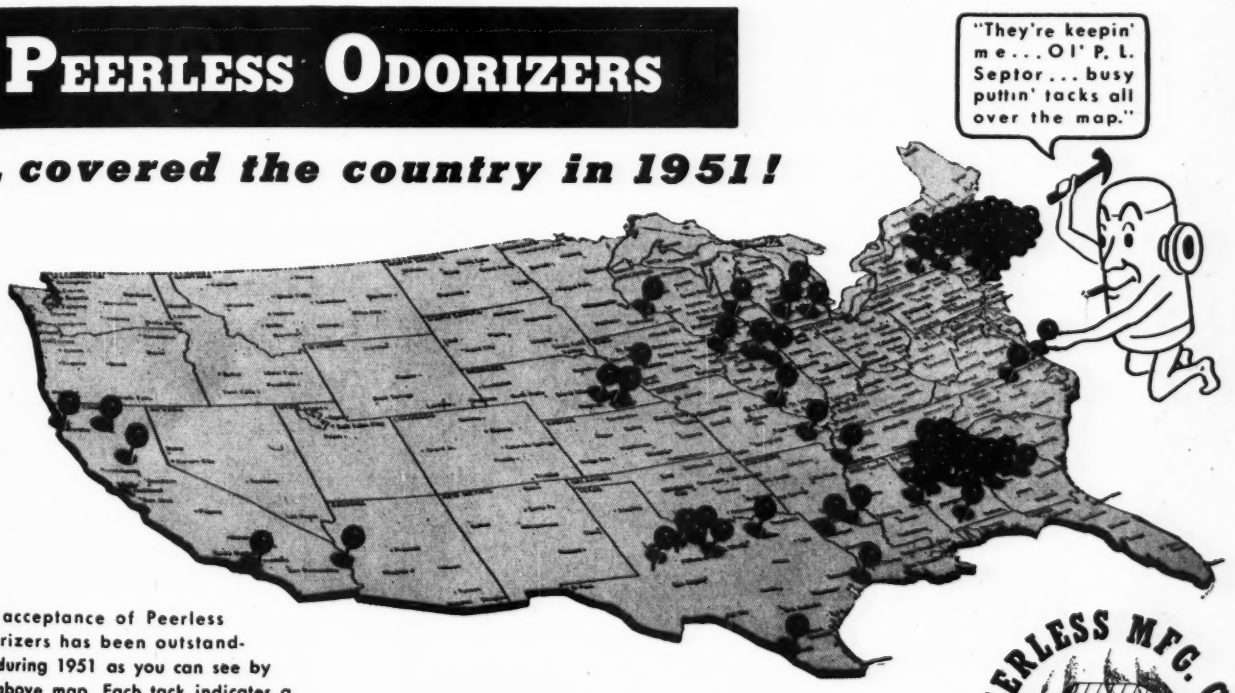
Manufactured under Consolidated Edison Company of New York, Inc. Patent Number 2,342,045. Application development assistance by Public Service Electric and Gas Company of New Jersey.

THE J. P. GLASBY MFG. CO. INC.

BELLEVILLE 9, NEW JERSEY — *Manufacturers of Glasby Conversion Burners and Furnaces*

PEERLESS ODORIZERS

. . . covered the country in 1951!



The acceptance of Peerless Odorizers has been outstanding during 1951 as you can see by the above map. Each tack indicates a Peerless Odorizer installation. Gas Companies are finding Peerless Odorizers accurate for metering odorant into natural gas lines. Operational costs are reduced to a minimum.

PEERLESS MFG. CO.

FOR FULLY ILLUSTRATED INFORMATION AND FACTS, CONSULT YOUR PEERLESS REPRESENTATIVE OR WRITE

PEERLESS MANUFACTURING CO.

P. O. BOX 7193 ★ DALLAS, TEXAS ★ DIxon-8431

REPRESENTATIVES IN ALL PRINCIPAL CITIES

NEWS

Columbia Gas companies ask PSC to restrict gas sales

Four Columbia Gas System companies operating in West Virginia have petitioned the PSC for restrictions on the sale of natural gas to new applicants for other than base load cooking, water heating, refrigeration, etc. According to John W. Partridge, president of United Fuel Gas and Amere Gas Utilities, estimates indicate a shortage of gas during cold winter days of 1953-54.

He added: "Our primary obligation is to provide adequate service to present customers. Restrictions on sales to new applicants are essential if this is to be done." Other companies joining in the petition are Cumberland & Allegheny Gas Co. and Manufacturers Light & Heat Co.

Last year the commission wiped out all gas restrictions except to those rare householders who use more than 1 MMcf of gas a month. On the contention that customer service would be jeopardized in cold weather, United Fuel tried unsuccessfully to get a state supreme court review of the commission's suspension order.

Columbia's most recent estimate indicates that on the peak winter day of 1953-54, the system will lack 414 MMcf of gas with which to meet the demand of present customers.

A public hearing was scheduled for late in April to hear Manufacturers' request. Prior to the hearing, a Wheeling, W. Va., committee met with a gas shortage committee of the Ohio Valley Board of Trade and Manufacturers officials to discuss the probable gas shortage.

ARCCO
BETA CHART PENS
...HOLD 2 to 4 TIMES MORE INK
Beta Fountain Pens hold two to four times the ink of ordinary chart inking pens. Regardless of the line thickness Beta Pens produce a smooth unbroken and uniform line. Pens shown are approximately actual size and can be arranged to reduce time interval between static and differential lines to only a few minutes. Beta Pens are especially suitable for seven day records. Price $1.10 (lower prices in quantities).
Send for bulletin No. 110.
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RECORDING CHART CO.
3113 E. 11th St. • Los Angeles 23, Calif.
Available for Early Delivery
SEND FOR BULLETIN No. 110

Construction commences on Consumers service center

Designed to keep service at a high level, a new modern public utility service center is being built by Consumers Power Co. in its Flint, Mich., division.

The new center will be built on a 38-acre tract and will consist of 175,000 sq ft of office and customer service area. The service building, outstanding feature of the center, will have a drive-in cashier's window, customer appliance and service facilities, and will house offices for the division's accounting, engineering, and construction departments.

Outdoor carports, equipment handling stations, drives, and ample customer-parking facilities, together with utility pole and pipe yards will be included in the center.

Arizona firm replaces steel mains with plastic pipe

The first plastic gas main installation in Arizona has just been completed by Tucson Gas, Electric Light & Power Co. using 2-in. transparent Kraloy 0-125 plastic pipe.

Replacing one and one-half miles of existing steel mains at Marana, a Tucson suburb, the plastic pipe was installed in approximately one and a half working days with two men laying about 100 ft of Kraloy pipe per hour.

C. H. Webber (standing), superintendent of Tucson (Ariz.) Gas, Electric Light & Power Co.'s gas department, looks on as Robert C. Raab, Kraloy executive vice president, (left), shows how Kraloy pipe sections are joined with a solvent cement.

The speedy installation is made possible by joining sections of pipe with a solvent cement, which takes just a few seconds.

C. H. Webber, superintendent of the company's gas department, states that they plan additional Kraloy plastic pipe installations in the Tucson area.

Requirements revised by AGA approval committee

Revised requirements and test procedures for gas clothes dryers, vented recessed heaters, incinerators, domestic gas ranges, water heaters, and room heaters were adopted at a recent Cleveland meeting of the AGA approval requirements committee. Although the standards do not become effective until Jan. 1, 1954, manufacturers may have their equipment approved by the laboratories under the new requirements any time in advance of the effective date.

The standard for gas clothes dryers was revised to fully cover the testing of conventional rotary types; new test procedures for measuring wall temperatures at reduced or zero clearances have been included. Other revisions cover drying chamber and allowable air discharge temperatures, and drying efficiency and performance when connected to duct work for exhausting the drying chamber atmosphere to the outside.

Approval requirements for vented recessed heaters were revised to specify testing the appliance as a unit. (For further details see p. 49 in this issue.)

In domestic gas range requirements, a proposal for means to effect automatic ignition of all top burners was adopted, together with a provision that a regular or giant top burner, or a section of it, that is classified as capable of simmering operation must be capable of maintaining a stable flame on the ports to which gas is flowing at an input of not over 500 Btu per hour. Every gas range approved under the revised requirements will also display on its name plate a marking outlining its proper field installation.

Incinerator requirements have been revised to permit design improvements in the combustion control of the incineration charge and the requirements now limit their provisions to units having a capacity not in excess of four bushels (5 cu ft) and which are manufactured, sold, and installed as complete units, not requiring field construction to complete the incineration chamber.

The committee also provided for additional marking provisions for room heaters and water heaters; reaffirmed 10 sets of approval and listing requirements; endorsed a procedure covering the conversion of unused approved room heaters, incinerators, clothes dryers, water heaters, and central heating equipment from one gas to another; and adopted in principle the policy of granting optional approval to appliances for use on natural gas only.

Ohio Fuel Gas employees receive educational assist

Under Columbia Gas System's employee education-financial assistance plan, which has recently become available, Ohio Fuel Gas Co. employees will receive financial assistance in furthering their formal education. The plan is designed to encourage regular employees to obtain additional education or training on their own time in a local college, university, or business or trade school.

Each operating group, through its education committee, will provide financial assistance to each employee who chooses to supplement his education, and who meets all the requirements of the plan, which will be administered by the employee relations department. William E. Hoare, director of the department, is serving as chairman.

Here is how the plan operates: When an employee has met the requirements for a

An all-time high record was set for attendance, registration, and sales-from-the-floor by the Western Metal Exposition and Congress held in March at the Pan-Pacific auditorium and Hotel Statler, Los Angeles, when more than 53,000 attended the five-day show. Among gas exhibits was this one of Natural Gas Equipment Inc., Pasadena, Calif., which pictured Surface Combustion and Natural Gas furnaces for all phases of heat treating.

Johnsonite
PLASTIC PIPE
will eliminate
CORROSION
entirely

JOHNSONITE No. 4 is highly recommended for gas lines.

GUARANTEED to last over 30 years even in the most corrosive soil conditions.

Lightweight and easy to handle.

JOHNSONITE No. 4 is manufactured of TENITE II only.

A Complete Line of Fittings In All of the Standard Sizes.

Gen. Pipe Size	Approx. Wgt. Per Ft.	Nominal O.D.	Cal. Burst P.S.I.
½"	.05 lb.	.60	830 lb.
¾"	.075 lb.	.855	600 lb.
1"	.135 lb.	1.14	600 lb.
1¼"	.20 lb.	1.42	600 lb.
1½"	.32 lb.	1.73	660 lb.
2"	.45 lb.	2.25	550 lb.
3"	.65 lb.	3.25	380 lb.
4"	1.00 lb.	4.10	360 lb.
6"	2.33 lb.	6.22	340 lb.

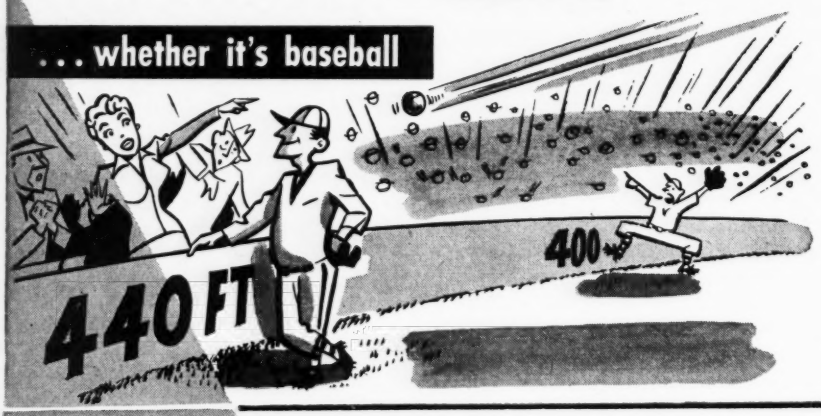
Write for Complete Catalog and Name of Nearest Dealer

JOHNSON PLASTIC CORPORATION

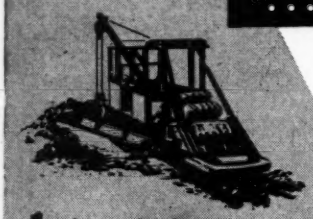
P. O. BOX 312 CHAGRIN FALLS, OHIO
DEPT. 55-C

It takes a FULL team

. . . whether it's baseball

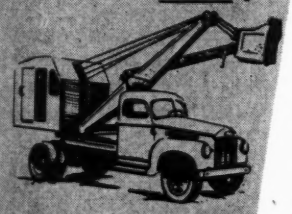


. . . or digging equipment



1. This is for big jobs

2. This is for medium jobs



3. Sherman for all other jobs

On many excavating jobs the use of big equipment is costly and time-consuming. The Sherman Power Digger is designed so that you get all the advantages of power digging on these jobs. Thousands of users have proved that the Sherman Power Digger reduces costs. Write today for descriptive literature J7.

See Us At The International Petroleum Exposition, Tulsa, May 14-23. Block 207 of North Extension.

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PACIFIC STATES CAST IRON PIPE CO., Provo, Utah

Pipe sizes 2" thru 24"

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Los Angeles 48, Calif., 6399 Wilshire Blvd.
San Francisco 4, Calif., 235 Montgomery Street
Portland 4, Oregon, 501 Portland Trust Bldg.
Salt Lake City, Utah, Waterworks Equipment Co.
Seattle, Wash., Smith Tower Bldg.

course of study, he is eligible for reimbursement for 50% of the tuition fee, provided he has paid this expense himself without assistance from the government or any other agency.

Any course of study is approved that is pertinent to the employee's present job, or to the job to which the employee might be promoted or transferred to at a later date. Although the company does not obligate itself to promote an employee after he has completed a course of study under this plan, Ohio Fuel does encourage every eligible employee to further his education and prepare himself for his immediate job and future advancement within the company.

F. S. Cornell

S. E. Wolkenheim

A. O. Smith will tour U. S. with "Get Set to Sell"

More than 14,000 dealers handling A. O. Smith Corp.'s Permaglas water heaters and other domestic and commercial water heating and househeating equipment will be exposed to a 2½-hr presentation in the company's intensive dealer-alerting program, "Get Set to Sell," this month. The kickoff meeting was held April 20-22 in Kankakee.

Some 20 teams from the Permaglas home base at Kankakee, Ill., will hit every principal city with more than 100 training and information meetings that will feature a new 45-minute sound color film.

The tour, together with the whole new set of promotional tools and merchandising aids to dealers, will cost approximately $300,000, according to S. E. Wolkenheim, general sales manager of the division. Working with Mr. Wolkenheim in the program is F. S. Cornell, general manager of the division.

Honeywell breaks ground for new Los Angeles factory

Ground has been broken for the first unit of a new Minneapolis-Honeywell factory that ultimately is expected to employ 2000 persons in Gardena, in the Los Angeles area.

The new plant, to be operated by the firm's Appliance Controls Div., will occupy a 16-acre site. The first unit of the plant, a machine shop, is expected to be completed by June and other sections will be erected in progressive stages. The factory will be of steel frame, reinforced concrete construction and functional design.

During the ground-breaking ceremonies, Honeywell Vice President John E. Haines

called attention to the "pronounced trend that has developed in the last few years toward greater use of automatically controlled heat in California homes, both old and new," and speaking of the tremendous growth potentials in California, "Honeywell will be ready to meet this population expansion when it comes."

The production of automatic controls for water heaters, floor furnaces, wall heaters, and central heating plants will, of course, surpass that already carried out at a smaller Los Angeles plant.

PAD appoints Oscar Morton to succeed Howard Noyes

Oscar W. Morton has been appointed acting assistant deputy administrator in charge of gas transmission and distribution operations in PAD, succeeding Howard B. Noyes, deputy petroleum administrator.

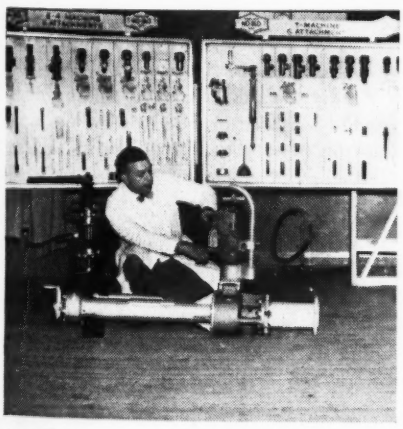
Mr. Noyes has returned to his former duties as vice president of the Washington (D. C.) Gas Light Co. Mr. Morton is on leave from the post of vice president of Panhandle Eastern Pipe Line Co., Kansas City, Mo.

G. Barrett Herr, who has served as director of PAD's gas facilities division, has also resigned and will return to his position as superintendent of stores for the Peoples Natural Gas Co., Pittsburgh.

Atlanta Gas group sees Mueller's traveling show

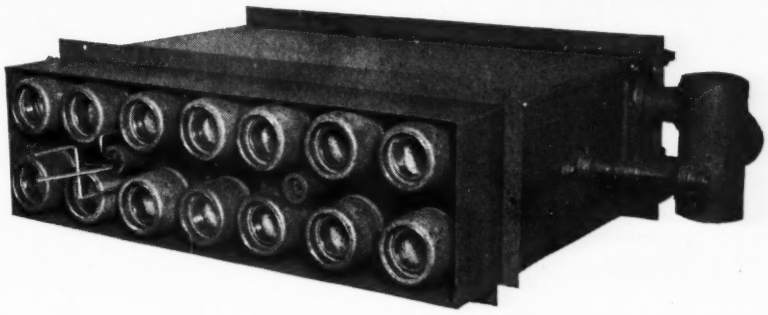
An exhibit created in an effort to acquaint key men in the gas and pipeline companies with the latest and safest methods of working on gas lines under high pressure was recently hosted by the Atlanta (Ga.) Gas Light Co. The demonstration was a part of the Mueller Co. "Traveling No-Blo Exhibit" which is currently touring the country.

With the introduction of natural gas at higher pressures, a need has arisen for newer and safer methods of handling gas under these conditions, and the improved equipment and tools that have been developed for this purpose are demonstrated by Frank Mil-



Mr. Miller demonstrating a drilling machine during a recent demonstration.

WEBSTER KINETIC* BURNER



FOR LOW PRESSURE GAS

Scotch Marine type boilers, air heaters and any other type of "cold" furnace can be fired by natural gas at higher ratings.

The Webster Kinetic Burner is easy to install, compact and economical to operate.

It fires with extremely low pressure gas without noise, vibration or electric power and with minimum furnace draft.

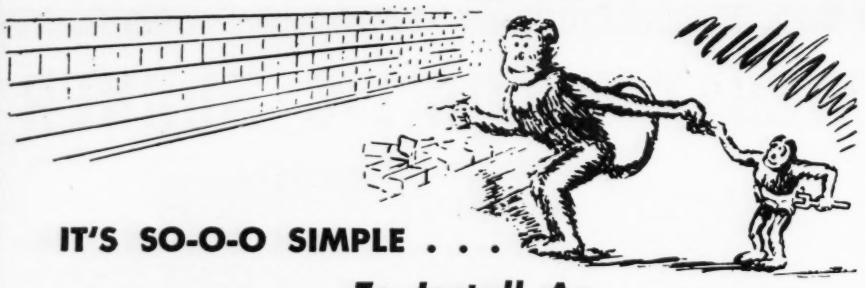
The Webster Kinetic consists of a multiplicity of full venturi mixers with flame retention nozzles. These are assembled in a metal casing complete with pilot and louvre. It may be used with natural, mixed or liquefied petroleum gases. Standby oil burners may be used when desired.

As a multiple head assembly it is available in 25 standard sizes of from 4 heads to 48 heads, and can be supplied in any size or shape. Natural gas input ratings from 560,000 Btu/hr to 6,720,000 Btu/hr at 4" wc. For complete information request Series B8 Bulletins.

*TRADEMARK

The WEBSTER ENGINEERING COMPANY
TULSA, OKLAHOMA
Division of SURFACE COMBUSTION CORPORATION, Toledo, Ohio

AUTOMATIC INCINOR
GAS-FIRED INCINERATOR
A "MUST" in Homes with Automatic Heat
A FULL-PROFIT LINE • NO TRADE-INS
INCINOR IS APPROVED BY A.G.A. LABORATORIES
ACT NOW FOR COMPLETE DETAILS
INCINERATION DIVISION, BOWSER, INC., CAIRO, ILL.



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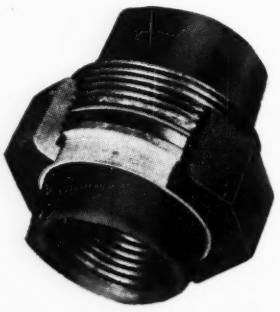
To Install An

INSULATED GASKET UNION

The Insulator You Have Been Searching For!

- Metal to Metal Threads
- Perfect Electrical Insulation
- 300# W. O. G.
- Will Not Break
- All Insulating Parts in Compression
- No Field Education Required
- Electrically and Pressure Tested

Sizes ½" - 3" Inclusive



SERVICE ENGINEERS, INC.

Manufacturers of Industrial Plastic Products

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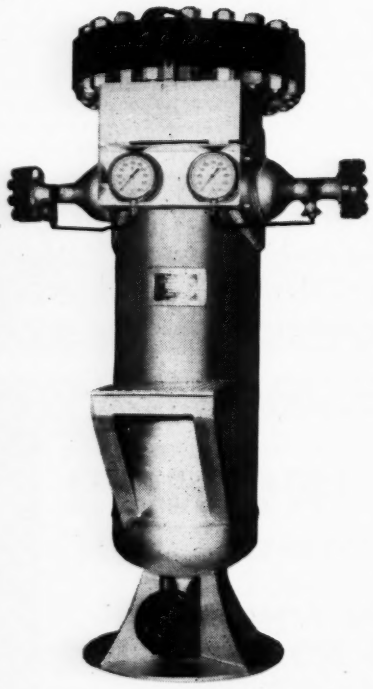
HOIL ON THE LINE . . .



Hoil's positive dust scrubber assures you clean, dry gas by the dry removal of dust, line scale, and other foreign matter from your gas transmission systems. Dry particles of foreign matter present in the line are blown down instead of scrubbing with oil, thus eliminating oily residue on the downstream side. Hoil Dust Scrubbers are highly adaptable for city gate distribution systems and compressor fuel intakes.

"Hoil Clarifiers" are designed for different working pressures and inlet and outlet sizes depending on your requirements. Easily changeable filter elements are provided, and units can be furnished with a small attached winch and raising equipment making it easy to change filters. Built-in differential gauges, protected by a box attached to the front of the scrubber, show you when to make the necessary infrequent filter change.

Obtain low installation costs, dependable performance, and prompt engineering service by ordering your gas transmission positive dust scrubbers "According to Hoil".

HOIL ENGINEERING CORPORATION

P. O. BOX 5094 - DONALDSON STATION • TULSA, OKLAHOMA

ler, Mueller gas field engineer, and his assistant, Francis X. Uhl. Whenever possible, the demonstrations are made under pressures that most nearly duplicate actual job conditions.

Numerous "tricks of the trade" and latest technical data are discussed during the demonstrations and individual and specialized problems are presented together with practical solutions.

Since last August, the unit has traveled 25,000 miles, presented the exhibits to over 300 companies, and the men have talked to more than 8000 gas industry personnel.

Ratio of gas to electric ranges narrows to 1.3:1

Even though January shipments of gas ranges showed an increase, electric range shipments had closed the ratio to its lowest point, 1.3 to 1, which is considerably behind the 2-to-1 of last year.

Shipments of gas-fired central heating equipment, ranges, and water heaters continued their upward trends during February, all showing increases over the February 1952 figures.

Furnace shipments were up 43.8%; ranges, up 7.3%; water heaters, 30.9%.

News Notes

Another recent convert to plastic tube for its distribution lines is Alabama Gas Corp., Birmingham. The plastic pipe is being installed as part of a company program of checking its mains and service, replacing a good part of the existing mains, and installing some service stubs.

The move from Toledo, Ohio, to Kankakee, Ill., of A. O. Smith Corp.'s Burkay commercial water heater manufacturing facilities has been completed. Production is now integrated with the Permaglas heating division of A. O. Smith Corp. and, according to D. J. O'Connell, manager of heating and Burkay products in the Permaglas division, the move will effect considerable efficiencies in both production and distribution of the products.

An oil-carbon fuel made by Seattle (Wash.) Gas Co. from manufactured gas residue has been drafted this spring in carload lots to help save Washington's valuable fruit crops as temperatures dipped unseasonably low. The Briquets, which are burned in smudge pots, offer advantages over fuel oil in economy, storage, and less smoke.

Reflecting an expansion of AGA promotion activities, a complete three-month sales promotion campaign on gas househeating has been launched and will run through June. To spearhead the sales push, AGA is making available full promotion kit, booklets, and newspaper ad material.

CALENDAR

May

7- 8..Public Utilities Advertising Assn. — Hotel Chase, St. Louis.
11-12..AGA Accident Prevention Conference—Jung hotel, New Orleans.
11-13..Southern Gas Assn. — Jung hotel, New Orleans.
11-15..National Fire Protection Assn. — Edgewater Beach hotel, Chicago.
11-15..34th Annual National Restaurant Convention & Exposition—Navy Pier, Chicago.
12-14..Pennsylvania Gas Assn. Convention.
13-14..PCGA Technical Section, Gas Supply & Transmission — Santa Barbara, Calif.
14-23..International Petroleum Exposition — Tulsa.
15-16..International Gas Union Council Meeting — Paris, France.
20-22..GAMA Annual Meeting — The Greenbrier Hotel, White Sulphur Springs, W. Va.
25-27..AGA Production and Chemical Conference—Hotel New Yorker, New York City.
25-28..Air Pollution Control Assn. Annual Meeting — Lord Baltimore Hotel, Baltimore.
27-29..Short Course in Gas Technology—Texas College of Arts & Industries, Kingsville.
28-29..Natural Gas & Petroleum Assn. of Canada — London, Ont., Canada.

June

14-18..Canadian Gas Assn.—Windsor hotel, Montreal.
22-23..Michigan Gas Assn.—Grand hotel, Mackinac Island, Mich.
29-30..AGA Residential Gas Section, New York-New Jersey Regional Gas Sales Conference — Monmouth Hotel, Spring Lake, N. J.

August

24-26..Appalachian Gas Measurement Short Course — West Virginia University, Morgantown, W. Va.

September

9-11..Pacific Coast Gas Assn. Annual Convention—San Francisco.
10-11..Midwest Gas School and Conference — Iowa State College, Ames.
11..New Jersey Gas Assn. — Spring Lake, N. J.

October

7- 9..NACE South Central Region — Mayo Hotel, Tulsa.
19-21..35th Annual Meeting, American Standards Assn.—Waldorf-Astoria, New York.
19-23..National Metal Exposition—Public Auditorium, Cleveland.
19-23..National Safety Council — Conrad Hilton, Congress, Morrison, and Sheraton hotels, Chicago.
26-28..AGA Annual Convention — Kiel Auditorium, St. Louis, Mo.

Positive Protection!

from *Runaway Pressures!* *Fires!*

NORWALK POSITIVE PRESSURE CUT OFF VALVES

- **Gives automatic shut off when excessive pressure arises or fire occurs!**
- **Easily reset to desired cut off pressure!**
- **No pressure loss!**
- **All parts external to gas flow!**
- **Quickly reset after operation!**
- **Sizes from 2" to 16"**

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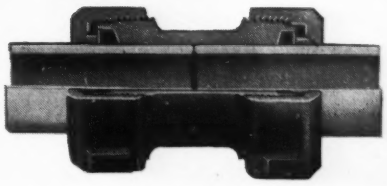
NORWALK VALVE COMPANY
South Norwalk, Connecticut



Telsco Malleable Iron Threadless Fittings

For steel or plastic pipe. Factory-assembled, ready to use. ◆ Nut compresses Clutch Ring, Friction Ring and Neoprene Rubber Gasket for a sure seal on gas lines (see cross section above). ◆ Available ½" through 2", in Galvanized or Black ("Parkerized") Finish. In bulk or standard packages. ◆ Metal stiffeners available for use with plastic pipe. ◆ Write today for literature and price list.

Telsco

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5420 REDFIELD DALLAS, TEXAS

STANDBY for NATURAL GAS

A packaged plant as designed, engineered and built by Draketown will provide a completely interchangeable fuel for your natural gas.

Ready in a matter of minutes, your Draketown Plant will click on automatically and take over all or part of your gas load. No delay — no appliance adjustments — no personnel problem.

During gas curtailment periods, "turn on" your Draketown Plant — you will find it pays dividends — it's good "Gas Insurance"!

★ STANDBY
★ PEAK SHAVING
★ 100% TOWN OR PLANT SUPPLY

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Your Assurance of a Good Job!

Serving utility and industry for over thirty years.

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A LIQUEFIED PETROLEUM GAS OF HIGHEST QUALITY

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LIQUEFIED PETROLEUM GAS DIVISION
TULSA, OKLAHOMA

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MADISON, WIS.
MOBILE, ALA.
MT. VERNON, ILL.
NEW YORK, N. Y.
OMAHA, NEBRASKA

GAS CLASSIFIED

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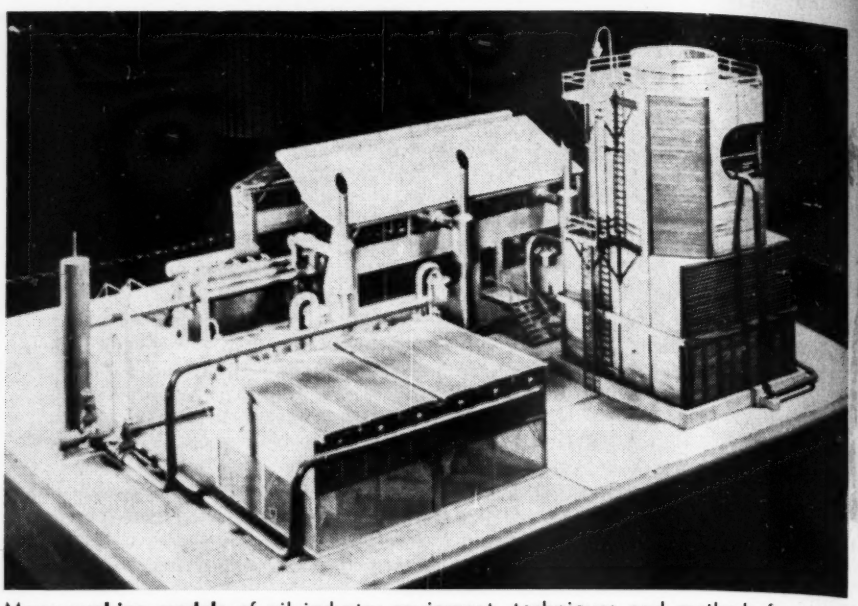
FOR SALE — 2 - 6' x 5' x 5' U.G.I. Water Gas Sets, 1939 and 1942, with Chrisman Valves, manual hydraulic operation, steam and electric driven blowers, condensers, scrubbers, exhausters, and oil storage tanks, 10,000 and 20,000 gallons. In whole or part. Gas Service, Inc., Nashua, New Hampshire.

EXCEPTIONAL OPPORTUNITY for man 40 to 50 qualified as Steam and Combustion Engineer with experience in the Sale, Servicing and Installation of Gas and Oil Burners as applied to BOILERS. Must have executive and management ability. National air traveling from home office required. Furnish complete details of experience in first letter, present employment and earnings, including recent photo. The Mettler Co. Inc., 4366 Worth St., Los Angeles 63, Calif.



Many working models of oil industry equipment, techniques and methods from every division of activity will be on display at the IPE. Pictured here is Fluor Corp.'s compressor station display.

$100 million in exhibits at oil industry's fair

The 30th anniversary International Petroleum Exposition, the "World's Fair of the Oil Industry," opens May 14 in Tulsa for a 10-day stand with a conservatively estimated $100 million in exhibits. William B. Way, exposition general manager, predicts that aggregate cost for staging the mammoth production will probably run "in the neighborhood of $10 million."

Early in April exposition officials reported over 150 carloads of packaged displays and models of newest types of equipment had already been set up, with more arriving on the scene daily.

Occupying the second largest exhibit block, behind General Motors, is Dresser Industries with 17,748 sq ft of space. A 143-ft IDECO full-view drilling mast, with complete rotary drilling accessories, will be demonstrated, along with an unusual portrayal of the "precision by the ton" theme on behalf of Clark Bros. Co.

Next in size of exhibit area is Oilwell Supply Div., U. S. Steel Corp., which has a display valued at $1 million. Units will include derricks, drilling rigs, feed controls, water flood pumps, cementing and acidizing pumps, slush pumps, and duplex gas boosters.

In the Hall of Science, long recognized as the world's foremost museum of science and industry devoted exclusively to petroleum and its products, groups of leading technologists have arranged displays depicting the course of oil activity from exploration through processing and distribution.

Microwave radio will also make its debut at the exposition with two commercial exhibits. One radio-relay system will be in actual operation. Displays will illustrate improvements and new developments in an attempt to show how the transportation division can turn to radio and electronics to increase capacity of its pipeline and keep track of oil from the well through gathering systems on to the refinery, and finally through distribution channels.

stand by or year 'round

LP-GAS PLANTS

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MODEL AB
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PALO ALTO, CALIFORNIA

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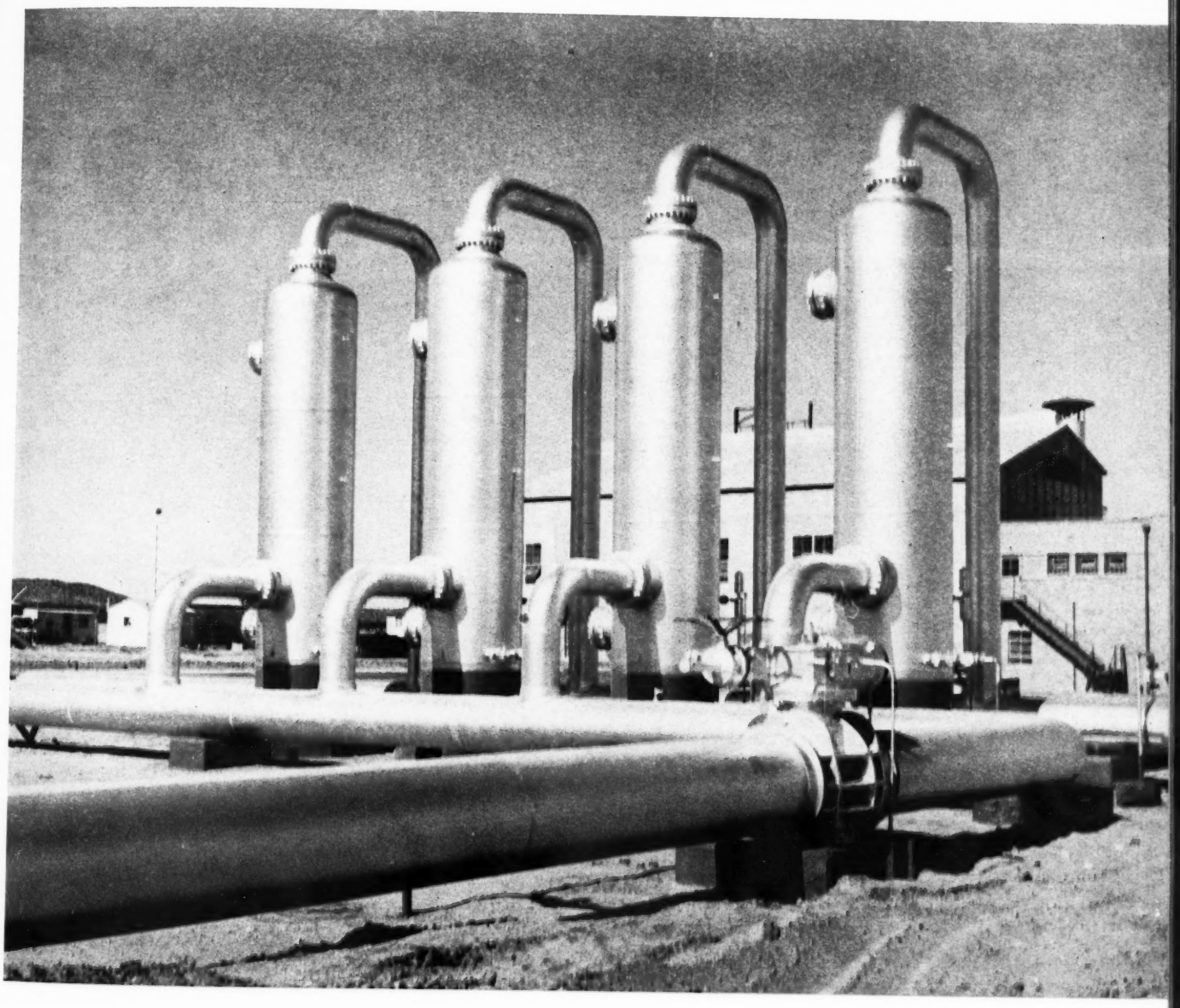
More than twenty years of experience in the industry with proven results. Past Chairman of the Accident Prevention Committee of the American Gas Association, Past Chairman of the Executive Committee, Public Utilities Section, of the National Safety Council, member of the American Society of Safety Engineers and Veterans of Safety and at present Safety Consultant for A.G.A.

Conference desired with gas company officials to work out a plan to reduce accidents and save cost of operation in your company.

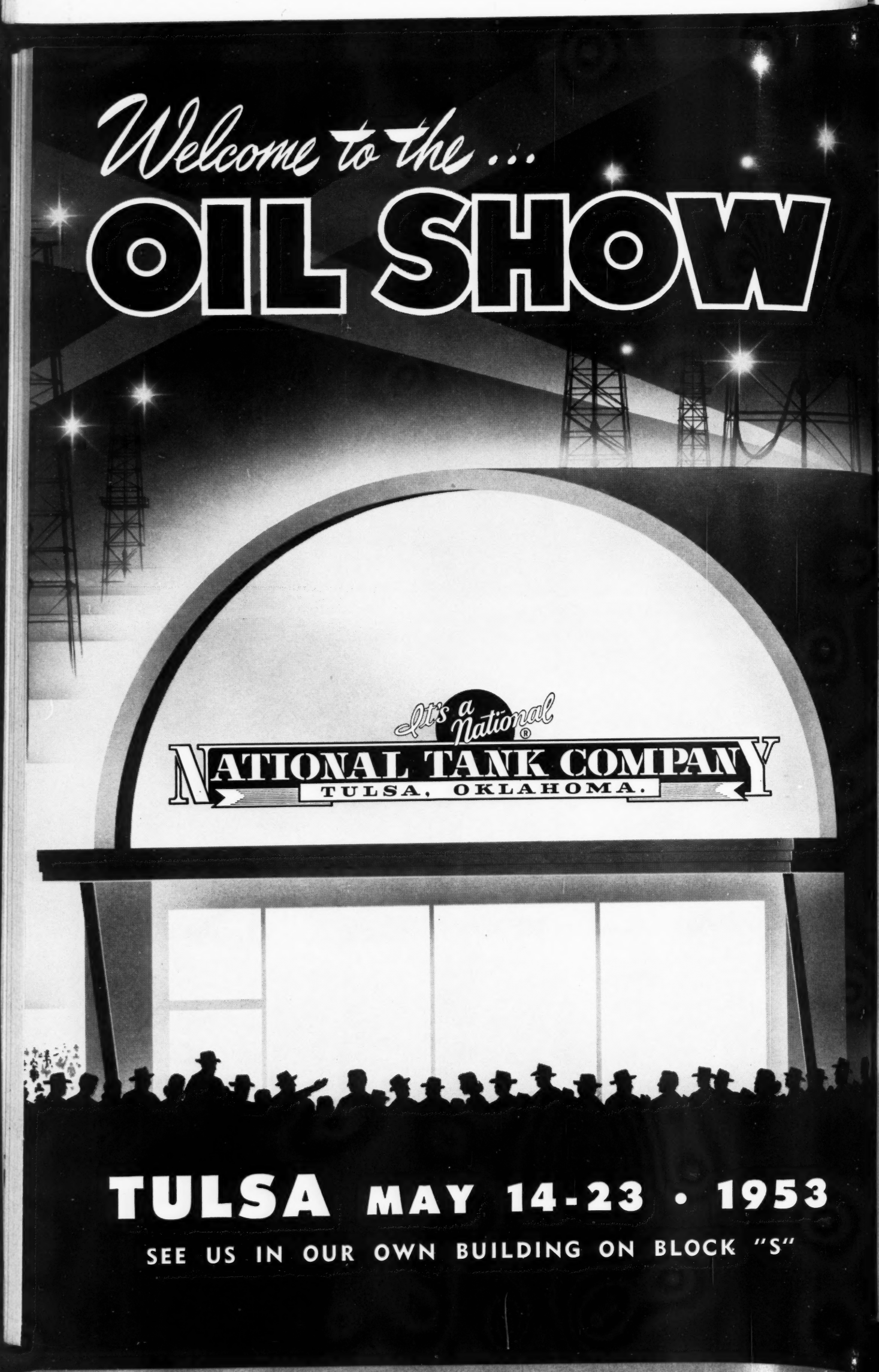
W. H. (Bill) Adams, 35 Upper Croton Avenue, Ossining, New York.

GAS

Transmission and Conditioning Section



Battery of four scrubbers stands like a row of sentinels at the point of entry to Cornudas compressor station in West Texas. Here gas enters one of the 10 new stations on El Paso Natural Gas Co.'s California line to be equipped with gas turbine-driven centrifugal compressors. Constituting one of the largest scale installations of this type of compressor in existence, the stations are enabling El Paso to boost deliveries by 300 MMcf. The Cornudas plant is described in an article in this section.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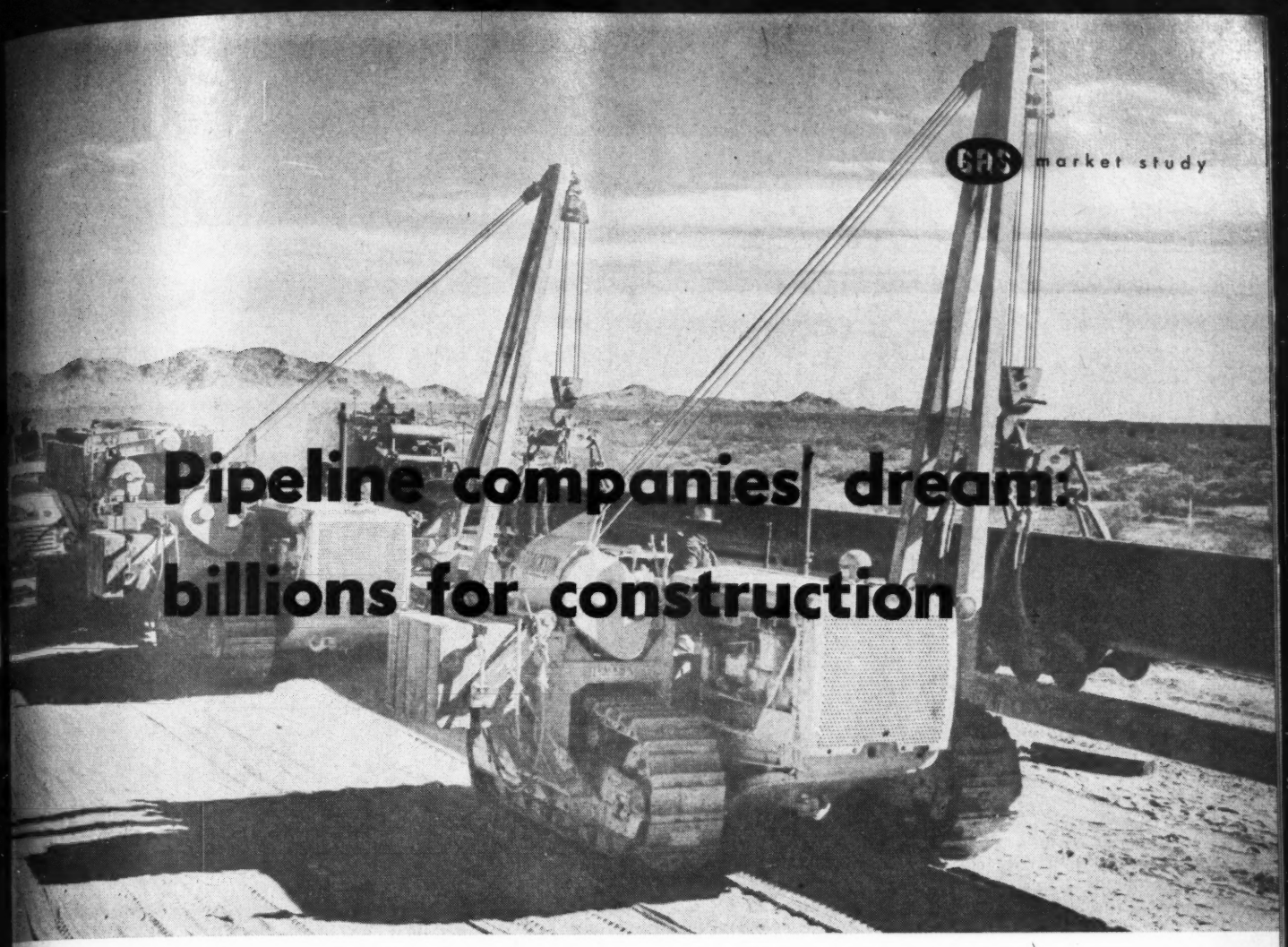

GAS market study

Pipeline companies' dream: billions for construction

THE annual prediction, voiced in some quarters, that market saturation of natural gas is drawing near are once again dispelled in the yearly *GAS* survey of transmission projects newly approved, under construction, or on the drawing boards. The figures, as compiled in this exclusive *GAS* study:

Total miles of lines approved or under construction—5312.

Total cost—$327,583,056.

Total miles of line proposed—13,595.

Total cost—$2,172,666,336.

In both categories, mileages and costs are of record, or near-record, dimensions. Work under way is up by about $2½ million over the 1952 mark, and mileages stretch out for a distance of 1400 miles in excess of last year's. But the truly fabulous records are those in the "proposed" classification. While last year's plans encompassed a "mere" 11,360 miles of line costing $948.5 million, in 1953 natural gas companies have documented their hopes of building enough line to stretch from coast to coast four and one-half times, costing in excess of $2 billion.

As always, proposals range from solid plans to mere dreams. There will be shakeouts—for example, nearly a half-billion is accounted for in the battle to serve the Pacific Northwest, and probably less than one-third of that amount will actually be certificated. Furthermore, $23 million of Colorado Interstate's budget proposals are linked with the plans of Pacific Northwest Pipeline Corp., which at latest reports definitely did not have the inside track in the race.

On the other hand, Texas Illinois and Chicago District were in the process of receiving a certificate for nearly $48 million worth of construction at presstime, and some of the proposals (e.g., El Paso's) were major additions to well established systems. And then there is the Gulf Interstate application to build a line to carry gas for the Columbia Gas System—this, in view of market conditions and the reputations of the companies involved, can be conceded an excellent chance to win a $127 million certificate.

It's almost a certainty that some plan to siphon off southern Alberta's excess gas will be officially blessed—and it could be Trans-Canada's $253 million line to carry gas to the eastern provinces.

A good share of the 33 jobs approved, under way, or completed since Jan. 1 are of the less spectacular (under $10 million) variety. But here again, El Paso has a $108 million program approved, Southern Natural and Tennessee Gas are working on $44 million jobs, and Southeastern Alabama Gas District is laying out $18 million to bring natural gas service to 24 small communities in a sizeable sector of the state.

In all, this year and the next and the next will find many companies and communities still wrestling with conversion problems, househeating waiting lists being drastically reduced, and pipeline contractors loaded with contracts.

On the following pages, GAS maps show projects proposed and projects approved or under construction in 1953, together with details of each.

Major pipelines • planned or proposed

Key to construction projects shown on the map

1. ATLANTIC SEABOARD CORP., Charleston. A 6600-hp compressor station, to be designated the Cleveland station, installed in southwest Upshur county, W. Va. on the company's 26-in. line to supply additional gas requirements of present customers. Part of a $6,885,600 project.

2. CENTRAL KENTUCKY NATURAL GAS CO., Charleston. An 8.6-mile loop extension on company's 20-in. line "E" in Robertson county, Ky. Cost: $676,000.

3. CHICAGO DISTRICT PIPELINE CO., Chicago. A third pipeline from Joliet, 35 miles of 30- and 36-in. line, to Crawford station in Chicago, to serve additional space heating customers in Chicago and in most communities in northern Illinois and transport gas from the Herscher storage project. Cost: $5.5 million.

4. COLORADO INTERSTATE GAS CO., Colorado Springs. A 365-mile, 22-in. line from Denver to connection with proposed Pacific Northwest Pipeline Corp. line at Green River, Wyo. with 5500-hp compressor station at Green River. Cost: $23,298,653. Also 49 miles of 20-in. loop paralleling existing line from the Kit Carson compressor station in Cheyenne county, Colo. northwest toward Denver; 30 miles of 12-in. line from the Morton county, Kan. gas field to 20-in. line in Colorado. Addition of a total of 8360 hp to three compressor stations—the Kit Carson, and the Fourway and Bivens in Moore county, Texas; construction of three new stations totaling 12,540 hp to be designated the Keyes in Cimarron county, Okla., Springfield in Prowers county, Colo. both on the existing 20-in. line, and the Morton county, Kan. station. Cost: $19,856,596.

5. THE EAST OHIO GAS CO., Cleveland. A 125-mile, 26-in. line extending 13 miles south from Cleveland and 112 miles west to Maumee, a point just south of Toledo. To benefit customers in the Cleveland area. Cost: $7.5 million, part of $17 million to be spent in 1953; over $6.85 million for distribution system; $277,000 for wildcatting in east Ohio; $760,000 for additional storage near Cleveland.

6. EL PASO NATURAL GAS CO., El Paso. Total of 1778 miles of line to include 750 miles of 30-in. and 70 miles of 24-in. with related gathering lines and facilities, to carry gas from the Permian basin in Texas and the four-corners San Juan basin, for additional deliveries to its California, New Mexico, and Arizona customers. A total of 157,000 hp in compressor stations, including seven new stations—the Pembrook, Midkiff, and Driver in the Permian basin, Plains in Yoakum county, and Pampa in Carson county, all in Texas, and the Bluewater and Lincoln stations in New Mexico. Additions to five stations—Goldsmith in Ector county, Texas; Eunice in Lea county, N. M.; Navajo, Leupp, and Williams in Arizona. Cost: $175,250,000.

7. EQUITABLE GAS CO., Pittsburgh. An 11½-mile, 6-, 8-, and 12-in. line from storage in Mobley, Wetzel county to Curtisville, Mannington district, Marion county, W. Va. A 1320-hp compressor station to be installed at Mobley to increase daily delivery capacity from Logansport Gas Storage project. Cost: $1,350,000.

8. GULF INTERSTATE GAS CO., Houston. An 860-mile, 30-in. line from Point Rayne, La. through Mississippi and Tennessee to Boyd county, Ky. with 229 miles of lateral lines and five 8000-hp compressor stations. To transport 375 MMcf of gas per day for United Fuel Gas Co., Charleston, W. Va. and Central Kentucky Natural Gas Co., an affiliate of United's. Cost: $127,887,000.

9. HOME GAS CO., Pittsburgh. A 46.7-mile line in Tioga and Broome counties, N. Y. Cost: $1,708,400. About 19 miles approved.

10. KANSAS-NEBRASKA NATURAL GAS CO., Hastings, Neb. A 15-mile line from Big Springs to Brule, Neb. to increase capacity for new loads in towns already served. Plan construction to begin about June. Cost: $307,000.

11. LONE STAR GAS CO., Dallas. A 5-mile, 12-in. line and a 2640-hp compressor station for storage area in New York City field in Clay county, Texas. Cost: $762,687. A 73-mile gathering and transmission system in Jack and Wise counties with new 3320-hp Jacksboro compressor station to boost service in Dallas area. Cost: $3,269,000.

12. NEW YORK STATE NATURAL GAS CORP., Pittsburgh. A 75-mile, 20-in. line from Cameron county, near Driftwood, Pa., southwest to a point in Armstrong county, Pa. Cost: $5 million.

13. NORTHERN NATURAL GAS CO., Omaha. A 400-mile, 24-in. line extending from the international border in the northwest corner of Minnesota to Farmington, just south of St. Paul, with two compressor stations totaling 10,560 hp. To serve existing utility customers. Cost: $24,630,000.

A project proposed to be completed in two years—first year's work to include about 248.7 miles of 24-, 26-, and 30-in. mainline and loop in Texas, Oklahoma, Kansas, Nebraska, and Iowa; 31,600 hp at three new compressor stations in Oklahoma and Kansas, and 6400 hp additions to two existing stations in Kansas and Nebraska; 472.74 miles of branch and branch loops in Iowa, Nebraska, Kansas, Minnesota, and South Dakota. Second year's construction to include 177.8 miles of mainline loop, principally 30-in.; and further additions to the five compressor stations of 24,400 hp. Cost: First year transmission, $31,836,500; first year branch lines, $12,771,500; second year transmission, $21,640,000; total $66,248,000.

14. NORTHWEST NATURAL GAS CO., New York. A system of 992 miles of line from Pincher Creek field in southwest Alberta southwest to international border into Idaho and Washington with lateral line to Trail, B. C.; continuing south to Spokane and west to Seattle with lateral extending south from this line to Hanford, Wash.; Portland north to Seattle and Vancouver, B. C. About 30,800-hp compressor capacity. Cost: $97,546,000.

15. PACIFIC GAS & ELECTRIC CO., San Francisco. Mainline loops totaling 259.7 miles of 34-in. and 14 miles of 24-in. on its Topock-Milpitas main; 8 miles of 30-in. from Milpitas to Irvington control station; and 4 miles of 24-in. from Oakland to Berkeley; with addition of 2500-hp compressor capacity. Cost: $31,650,000. Various smaller loops totaling 26.9 miles. Cost: $1,001,000. Also 29 miles of 10-in. line from Corning gas field to Chico, Calif. Cost: $815,000. Total cost for proposed projects: $33,466,000.

16. PACIFIC NORTHWEST PIPELINE CORP., Houston. A system including 1466 miles of mainline extending from Ignacio, Colo. in the San Juan basin to Bellingham (Seattle area), Wash. with 380 miles of spur and lateral lines to make deliveries to Colorado Interstate near Rock Springs, pick up reserves from Dry Piney (Wyo.) and Rangely (Colo.) fields, and serve Hanford, Yakima, Spokane, and Walla Walla, Wash. System to include 16 compressor stations with total of 104,420 hp. Cost: $186 million.

17. PERMIAN BASIN PIPELINE CO., Omaha. A 234-mile line—200 miles extending from the Mitchell Co. removal plant in Pecos county, Texas to the proposed Plymouth and Pembrook compressor stations in Uptown county, and the Spraberry station in Midland county, and to a connection with El Paso Natural at its proposed Plains station in Yoakum county, Texas; and 34 miles from a proposed station at Hobbs, N. M. to the Plains station connection. The project includes installation of 54,880 hp—42,800 hp the first year and 12,080 hp the second year—at the four stations. Permian will deliver 300 MMcf of gas to El Paso

Natural Gas Co. at the Plains connection and take delivery of a like amount at El Paso's Dumas station for sale to Northern Natural Gas Co. at that point. Cost: $43,530,000.

18. SOUTHERN CALIFORNIA GAS CO. & SOUTHERN COUNTIES GAS CO., Los Angeles. Three sections of loop line totaling 73 miles on the Blythe-to-Santa Fe Springs mainline and installation of 5280 hp at Blythe to increase service to Los Angeles metropolitan area. Cost: $6,195,000. Also a 6-mile line in Los Angeles. Cost: $772,000.

19. TEXAS ILLINOIS NATURAL GAS PIPELINE CO., Chicago. Addition of 10,000 hp at five existing stations at Marion, Ill.; Pocahontas and Malvern, Ark.; Marshall and Conroe, Texas; construction of six new stations totaling 70,000 hp at Hammond, Ill.; Marble Hill, Mo.; Searcy and Texarkana, Ark.; Lufkin and Wharton, Texas, to augment supplies of gas carried to Natural Gas Pipeline Co. customers. Cost: $42,148,000.

20. TRANS-CANADA PIPE LINES LTD., Dallas. A 2200-mile, 30-in. line from Alberta to Toronto; 24-in. from Toronto to Montreal, with a 14-in. branch to Ottawa; 18-in. southwest from Toronto to a point in Ontario. A 747-mile gathering system (not shown on map) and 13 compressor stations totaling 94,160 hp. Cost: $253 million.

21. TRANS-NORTHWEST GAS INC., Spokane. To build system of about 475 miles from connection with Westcoast Transmission Co. Ltd. at Osoyoos, B. C. south to Hanford, Wash. with line continuing east through Spokane to Wallace, Idaho, and north from Spokane to Trail, B. C. To serve Hanford Atomic Energy Commission project at Hanford, Spokane, Coeur d'Alene, Kellogg, and Wallace, Idaho, Trail and Rossland, B. C.

22. UTAH NATURAL GAS CO., Salt Lake City. A 96-mile line beginning with 18-in. pipe in fields in Carbon, Emery, and Sanpete counties, Utah, running northwest to a point near Provo and continuing with 16-in. pipe to a point near Salt Lake City, with laterals, field and gathering lines, dehydration plants and appurtenant facilities. To serve Provo and Salt Lake area. Cost: About $32 million.

23. WESTCOAST TRANSMISSION CO. INC., Wilmington, Del. A system including 396 miles of line from the international boundary near Sumas, Wash. to Portland, Ore. with several short branch lines. To serve Bellingham, Everett, Seattle, Tacoma, Olympia, Centralia, and Longview, Wash. and Portland, Ore. and intervening communities. Cost: $19,370,000. Parent company, Westcoast Transmission Co. Ltd. of Canada, to build 923 miles of line from the Tangent gas field in Alberta to the international boundary near Sumas, Wash. to include 29,040 hp in compression. This has been approved and construction will be started upon FPC approval of the U. S. portion of the system. Cost: $92,896,000.

New Cities to Receive Natural Gas:

ALABAMA

Abbeville
Albertville
Arab
Boaz
Brantley
Brundidge
Camp Hill
Cullman
Elba
Enterprise
Eufaula
Fort Deposit
Gantt
Glenwood
Greenville
Guntersville
Headland
Helena
Jemison
Luverne
Midland City
Morris
New Brockton
Newton
Newville
Opp
Pinchard
Rutledge
Seale
Thorsby

ARKANSAS

Centerton
Crawfordsville
Earl
LePanto
Marion
Marked Tree
Parkin
Trumann
Tyronza
West Fork
West Memphis

COLORADO

Castle Rock
Eads
Fountain
Grand Junction

FLORIDA

Havana
Quincy

GEORGIA

Aiken
Americus
Bainbridge
Cairo
Camilla
Cordelle
Dawson
Moultrie
Pelham
Richland
Thomasville

IDAHO

Boise
Coeur d'Alene
Kellogg
Pocatello
Wallace

IOWA

Alta
Ankeny
Aurelia
Bayard
Carroll
Castle Hill
Cedar Falls
Colfax
Glidden
Klemme
Mitchellville
Newton
Ralston
Scranton
Storm Lake
Waterloo

MINNESOTA

Cannon Falls
Red Wing

NEBRASKA

Bellevue
Bloomfield
Clearwater
Coleridge
Creighton
Eagle
Ewing
Hartington
Inman
Laurel
North Bend
O'Neill
Osmond
Pierce
Plainview
Randolph
Wausa
Waverly

NEVADA

Henderson
Las Vegas

NEW YORK

Norwich
Oneonta
Watertown

NORTH CAROLINA

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Caroleen
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Cary
Chapel Hill
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Durham
Enka
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Forest City
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Raleigh
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OREGON

Baker
Pendleton
Portland

SOUTH CAROLINA

Bamberg
Charleston
Columbia
Denmark
Orangeburg
Summerville
Walterboro

SOUTH DAKOTA

Harrisburg

TENNESSEE

Bristol
Elizabethton
Greeneville
Johnson City
Kingsport
Morristown

UTAH

Provo
Salt Lake

WASHINGTON

Bellingham
Centralia
Everett
Hanford
Longview
Olympia
Seattle
Spokane
Sumas
Tacoma
Walla Walla
Wenatchee
Yakima

WYOMING

Laramie
Rock Springs

BRITISH COLUMBIA

Kamloops
Prince George
Trail
Vancouver

Removal of Large Micron Dust Particles IS NOT ENOUGH!

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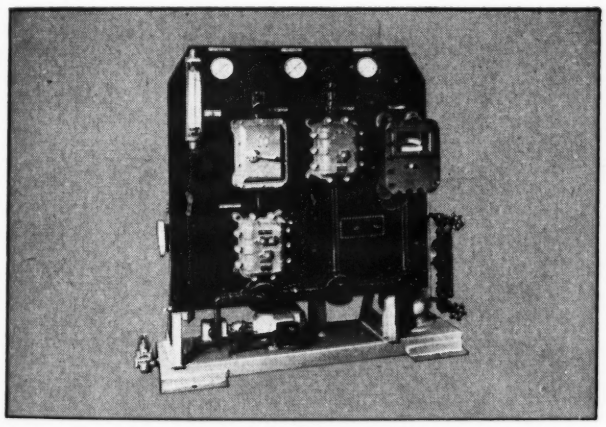
take out the SMALLEST PARTICLE of pipe line dust

Repeated tests have proved it's the *small* dust particles which cause the most trouble and damage in gas systems. Pilot stoppages, for example, are caused by dust particles ranging in size from 10 microns to less than one micron.

OIL BATH SCRUBBING

is the only gas cleaning method definitely known to remove even the smallest dust particles from gas. Blaw-Knox Oil Bath Process Gas Cleaners give you much more than a high percentage of dust removal —they clean out the smallest particle of dust from your gas stream and effectively stop plugging of pilot orifices and damage to regulators, compressor parts and metering devices. They cut maintenance and service costs and improve customer relations by providing *clean* gas at all times. For complete information, write for Bulletin 2353.



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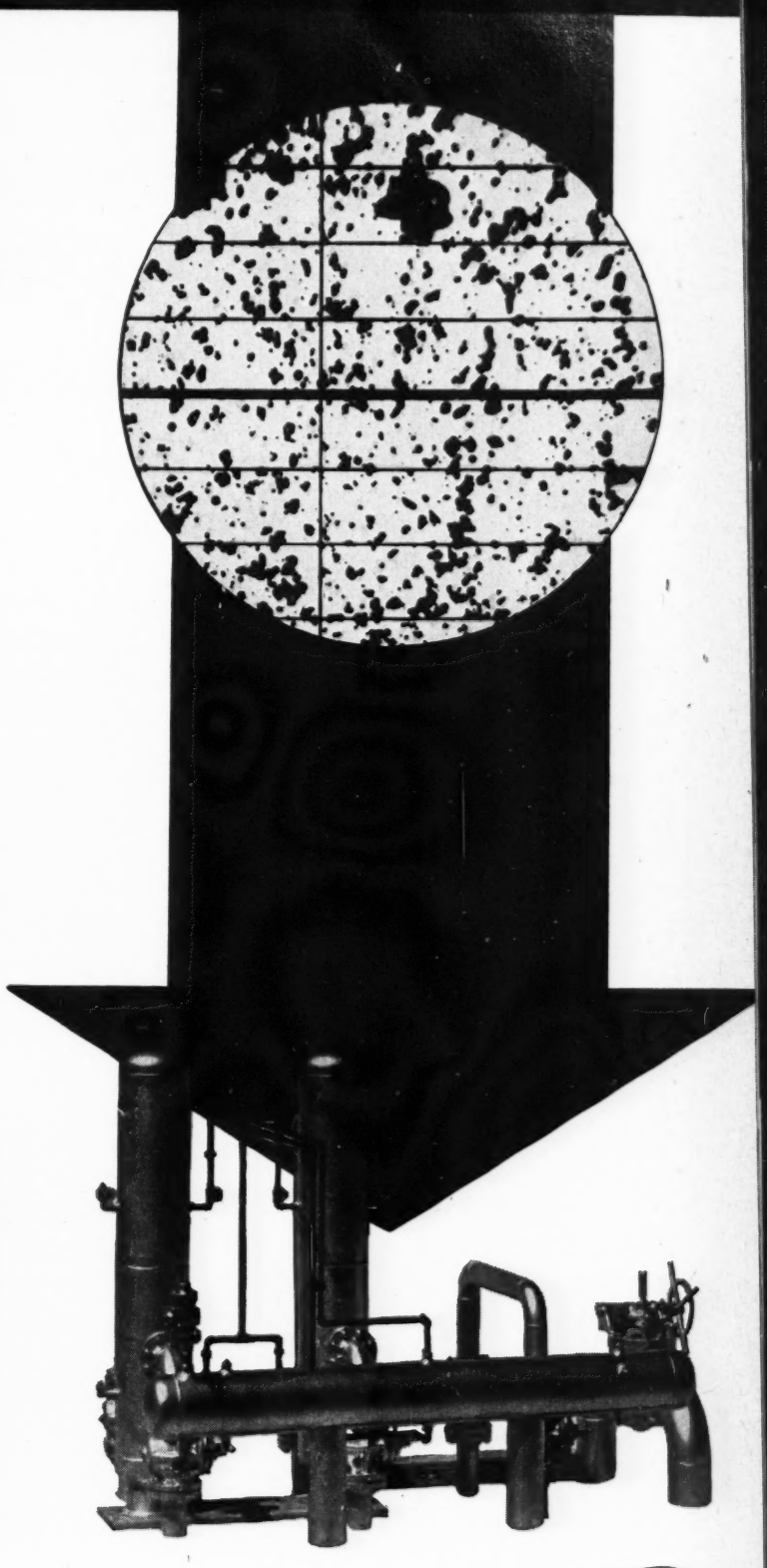
These approved units are now fogging millions of cubic feet of gas hourly. They are made in standard and portable sizes.



BLAW-KNOX

BLAW-KNOX COMPANY
GAS EQUIPMENT DEPARTMENT
PITTSBURGH 22
PENNSYLVANIA

1953 pipeline construction • approved and underway

Key to construction projects shown on the map

1. ARKANSAS-LOUISIANA GAS CO., Shreveport. A 10,000-hp compressor station at Taylor, Ark. Cost: $2,849,940. Work begun in Dec. 1952.

2. ARKANSAS WESTERN GAS CO., Fayetteville, Ark. About 10 miles of line from Fayetteville to West Fork to serve Greenland and West Fork, Ark. Work started Jan. 1953. Cost: $91,000. A 5-mile line from Bentonville to Centerton to serve Centerton, Ark. Work started Feb. 1953. Cost: $35,000.

3. CITIES SERVICE GAS CO., Oklahoma City. A new 6600-hp compressor station at Hesston, Harvey county, Kan. and addition of 4800-hp to the Greensburg station, Kiowa county, Kan. Work begun March 1953. Cost: $2,781,000. Also a 200-mile gathering system (not shown on map) in Hugoton field. Total project cost about $4 million. Expected to be complete in September.

4. COLORADO INTERSTATE GAS CO., Colorado Springs. A 5-mile line to serve Fountain, 14 miles to serve Fowler, 9 miles for additional service to Ordway, and a short line to serve Eads, Colo. and vicinity.

5. EAST TENNESSEE NATURAL GAS CO., Knoxville. A 100-mile, 16-in. extension of its natural gas system from a point near Knoxville to the Kingsport, Tenn. area, with about 58 miles of various sized lateral lines. To serve Morristown, Johnson City, Elizabethton, Bristol, Greenville, and Kingsport, Tenn. Cost: $5.8 million.

6. EL PASO NATURAL GAS CO., El Paso. About 260 miles of line in Permian basin area, Texas, 23 in San Juan basin, N. M., and 57 near Topock, Ariz., and about 153,000 hp in mainline and booster compressor stations to provide additional capacity for delivery to California. Under way in Sept. 1952. Cost: $108,680,164.

7. KANSAS-NEBRASKA NATURAL GAS CO., Hastings, Neb. About 167 miles of line extending northwest from Neligh 40 miles to a terminus at O'Neill with another line extending northeast with a terminus at Hartington, to serve 14 new towns, O'Neill, Inman, Ewing, Clearwater, Plainview, Creighton, Pierce, Wausa, Osmond, Bloomfield, Randolph, Coleridge, Hartington, and Laurel, Neb. Construction to start May 1, 1953. Cost: $1.1 million. Also 19 miles from Palco to Hill City, Kan. to give additional capacity for increased loads in towns already served. Construction to start in June. Cost: $207,000.

8. LONE STAR GAS CO., Dallas. Nearly 200 miles of various sized lines throughout system, addition of 770-hp to compressor capacity to connect reserves and storage and increase service to existing customers.

9. MICHIGAN GAS STORAGE CO., Jackson. A 30-mile, 26-in. line from Laingsburg Junction to Ithaca, Mich. to increase service to present customers, particularly in Flint and Pontiac areas. Construction to start May 15. Cost: $2,167,500.

10. MIDSOUTH GAS CO., Little Rock. A 20-mile line from a point near Memphis to Marion, Ark. to serve West Memphis and Marion, Ark. Construction to start in May. Cost: $1,475,000. A 72-mile line from Marion terminating at Trumann, Parkin, and LePanto, Ark. to serve Crawfordsville, Earl, Parkin, Tyronza, Marked Tree, LePanto, Trumann. Construction scheduled for 1954. Cost: $1,225,000.

11. NATURAL GAS CO. OF W. VA., Pittsburgh. A 7.46-mile line in Columbiana county, Ohio, replacing like amount. Cost: $77,068.

12. NEVADA NATURAL GAS PIPE LINE CO., Las Vegas. A 120-mile, 12¾-in. line from Topock, Ariz. to Las Vegas and Henderson areas. Construction to start about July 1, 1953. Cost: $2,300,880.

13. NEW YORK STATE ELECTRIC & GAS CORP., Ithaca. A 49-mile line from DeRuyter to Norwich and Oneonta, N. Y. to convert the latter cities from manufactured to natural gas. Construction scheduled to begin May 1, 1953. Cost: $1.5 million.

14. NEW YORK STATE NATURAL GAS CORP., Pittsburgh. A 13-mile, 20-in. line from Genesee Falls, Pa. north to a point near Perry Center, N. Y.; a 21.5-mile, 14-in. line from a point east of Skaneateles southeast to the Therm city compressor station in Onondaga, N. Y.; a 5-mile, 20-in. line from the Ithaca compressor station in Dryden, N. Y. northeast parallel to existing 20-in. line to Dryden, N. Y.; a 19.3-mile, 20-in. line from a point near the Sabinsville compressor station in Tioga county northeast to a point near the Boom compressor station in Tioga county, Pa.

15. NIAGARA MOHAWK POWER CORP., Syracuse, N. Y. A 52-mile transmission and 2-mile distribution line from Volney, N. Y. to Watertown to convert Watertown to natural gas, costing $2,096,000; 5.5 miles of 24-in. and 5 miles of 20-in. line from Therm City delivery point to Syracuse to provide increased capacity for Syracuse and suburban area, costing $1,029,000; 11¾ miles of 12-in. main from Amsterdam to Gloversville, N. Y. to increase capacity to Johnstown and Gloversville, costing $545,000. First project started in April, third scheduled to start May 15.

16. NORTHWESTERN UTILITIES LTD., Edmonton. A 40-mile line of 4-, 12-, and 16-in. pipe running southeast from Legas gas field north of Edmonton to connection with existing line 20 miles east of Edmonton; a 20-mile line from the Viking-Kinsella field northeast to Vermilion; a new 450-hp compressor station near Wetaskiwin, Alberta, Canada.

17. OHIO FUEL GAS CO., Columbus. Five gas pools to be converted to storage; one in Ashland and Richland counties to be added to Weaver storage area; formation of the new Holmes storage area with four pools in Holmes, Wayne, and Ashland counties; 34.5 miles of 20-in. line to bring gas in; and a 6000-hp compressor station. Also 97 miles of line to connect areas with existing transmission facilities. Cost: $4,880,000.

18. OKLAHOMA NATURAL GAS CO., Tulsa. A 50-mile, 18-in. line northeast from Sapulpa to Pryor, Okla. to serve two new customers—the Grand River Dam Authority steam plant and the Deere & Co. chemical plant. Scheduled to begin April 20. Cost: $2 million.

19. PACIFIC GAS & ELECTRIC CO., San Francisco. Loop line totaling 86 miles of 34-in. pipe on the Topock-to-Milpitas mainline with additions of 19,540 hp to existing compressor stations. Work expected to be complete in summer of 1953. Cost: $13,428,000. Also 20 miles of 16-in. loop from Burrel field to Easton in Fresno county, Calif. Cost: $763,400. An 8-mile, 20-in. line from Helm tap to Helm junction in Fresno county to be started in Aug. 1953. Cost: $446,000.

20. PEOPLES NATURAL GAS CO., Pittsburgh.

Four sectors of 10-in. line totaling 24 miles to supply increased demand of existing customers; 14.2 miles of 12-in. line in three sections to supply increasing demands and serve new commercial consumers near Hollidaysburg, Pa.; 2 miles of 16-in. line to replace a smaller line to Johnstown. Total cost: $1,453,000.

21. PUBLIC SERVICE CO. OF N. C., Gastonia. A 55-mile, 10- and 8-in. line from Burlington to Raleigh, N. C. to serve Chapel Hill, Cary, Durham, Carrboro, and Raleigh. Cost: $1.3 million. A 93-mile, 8-in. line from Kings Mountain to Asheville to serve Cliffside, Caroleen, Forest City, Spindale, Rutherfordton, Hendersonville, Fletcher, Asheville and Enka. Cost: $2.5 million.

22. SOUTH CAROLINA NATURAL GAS CO., Columbia. A 160-mile system starting at Aiken with termini at Charleston and Columbia and branch lines to Denmark, Bamberg, Orangeburg, Walterboro, and Summerville, S. C. Cost: $5,945,000.

23. SOUTH GEORGIA NATURAL GAS CO., Birmingham, Ala. A 335-mile line to serve communities in southeast Georgia and northern Florida. Main trunk would connect with Southern Natural Gas Co. in Lee county, Ala. and extend to Albany, Ga. with a branch line to Tallahassee, Fla. Cost: $8,141,518.

24. SOUTHEAST ALABAMA GAS DIST., Birmingham, Ala. A "U" shaped system of about 330 miles of line to serve southeastern Alabama. Owned by 14 municipalities, the system will also serve 10 other communities from connections with Southern Natural Gas Co. near Montgomery and Phenix City. Southern points of the line are Andalusia and Dothan. Cost: $18.3 million.

25. SOUTHERN CALIFORNIA GAS CO. & SOUTHERN COUNTIES GAS CO., Los Angeles. A 14-mile loop of 30- in. pipe between Whitewater river crossing and Indio; and 6.3 miles of line from Colorado river to Blythe compressor station. New compressor capacity of 3520 hp at Blythe, 5000 hp at Desert Center, and 5000 hp at Cactus City. Total cost: $5,053,686. To be completed by late summer.

26. SOUTHERN NATURAL GAS CO., Birmingham. About 792-mile project of looping and extension and 18,500-hp compressor capacity —234.7 miles of third line loop from Pickens, Miss. to Lincoln, Ala.; various sections totaling 49.8 miles from Lincoln to Atlanta, Ga.; 270 miles of new line from the Chattahoochee river to Gwinville and from Gwinville to Pickens, Miss.; and 250 miles from Macon, Ga. with termini at Aiken, S. C. and Savannah, Ga.; 396.4 miles of gathering lines including laterals to South Bend and Main Pass, La., north to Franklinton, La. and Gwinville. Addition of 5400-hp at the Gwinville compressor station, a new 3300-hp station at Estopinal, La.; a 5400-hp station at Chattahoochee, Ga. and a 4400-hp station at Bass, Ga. System will serve companies and customers' in Mississippi, Alabama, Georgia, and South Carolina. Work is under way with completion expected about Oct. 1, 1953. Cost: $44,932,600.

27. TENNESSEE GAS TRANSMISSISON CO., Houston. About 369 miles of loop line and 11,440-hp in compressor capacity including 173 miles of 30-in. and 74 miles of 26-in. loop in various sectors along the line in Texas, Louisiana, Tennessee, Kentucky, and Ohio; and a 132-mile, 24-in. line from Mercer, Pa. to Hebron storage field in Potter county, Pa. Addition of 2640 hp will be made at Carrollton, Ohio station; 2200 hp at Mercer, Pa., and a new 6600-hp station will be built at Kinder, La. Construction begun in March Cost: $44.7 million.

28. TEXAS EASTERN TRANSMISSION CORP., Shreveport. A 315-mile, 24-in. line from a connection with Wilcox Trend Gathering System at Provident City, Texas, northeast to Castor, La. Construction began Jan. 1953. Cost: $23 million.

29. TEXAS GAS TRANSMISSION CORP., Owensboro, Ky. Two sections of loop totaling about 44 miles of 26-in. pipe, one near Jeffersontown and the other near Slaughters, Ky. To be completed this spring.

30. UNITED GAS PIPE LINE CO., Shreveport. About 134 miles of miscellaneous 12-, 16-, 20-, and 24-in. line in Texas, Louisiana, and Florida and completion of additions to three compressor stations and installation of six new stations in Texas, Louisiana, and Mississippi. Part of a $111 million project; mainline mileage completed in 1952.

31. UNITED NATURAL GAS CO., Oil City, Pa. Two sectors of line, one about 14.3 miles of 12-in. from Van to Oil City, Pa., construction started in January; the other about 5.1 miles of 8-in. line from Driftwood to Elk county, Pa., construction begun in April. Expected to be completed in June. Cost: $798,500.

32. WESTERN SLOPE GAS CO., Denver. About 60 miles of line to complete transmission and gathering line to transport gas from the Douglas Creek and Germesa fields to Grand Junction area. Expect completion by fall of 1953. Cost of total project: $1,362,800.

33. WILCOX TREND GATHERING SYSTEM INC., Dallas. Trunk line of about 155 miles—75 miles of 14-in. and 70 miles of 16-in.—and 90 miles of gathering lines of from 3- to 8-in. from a point near Freer, Duval county, Texas to Provident City connection with Texas Eastern line. A 2240-hp compressor station to be installed at Thomaston, Texas. Construction begun in Dec. 1952. Cost: $10 million.

Additional compressor horsepower: planned, approved, or underway

	Compressor Capacity (Horsepower)	
	ADD	NEW
Arkansas-Louisiana Gas Co.		10,000
Atlantic Seaboard Corp.		6,600
Cities Service Gas Co.	4,800	6,600
Colorado Interstate Gas Co.	8,360	18,040
El Paso Natural Gas Co.	62,200	251,760
Equitable Gas Co.		1,320
Gulf Interstate Gas Co.		40,000
Lone Star Gas Co.		6,730
Northern Natural Gas Co.	30,800	42,160
Northwest Natural Gas Co.		30,800
Northwestern Utilities Ltd.		450
Ohio Fuel Gas Co.		6,000
Pacific Gas & Electric Co.	2,500	19,540
Pacific Northwest Pipeline Co.		104,420
Permian Basin Pipeline Co.		54,880
Southern California Gas Co. and Southern Counties Gas Co.	15,280	3,520
Southern Natural Gas Co.	5,400	13,100
Tennessee Gas Transmission Co.	6,600	4,840
Texas Illinois Natural Gas Pipeline Co.	10,000	70,000
Trans-Canada Pipelines Ltd.		94,160
Westcoast Transmission Co. Inc.		29,040
Wilcox Trend Gathering System Inc.		2,240
	145,940	816,200

Total 962,140

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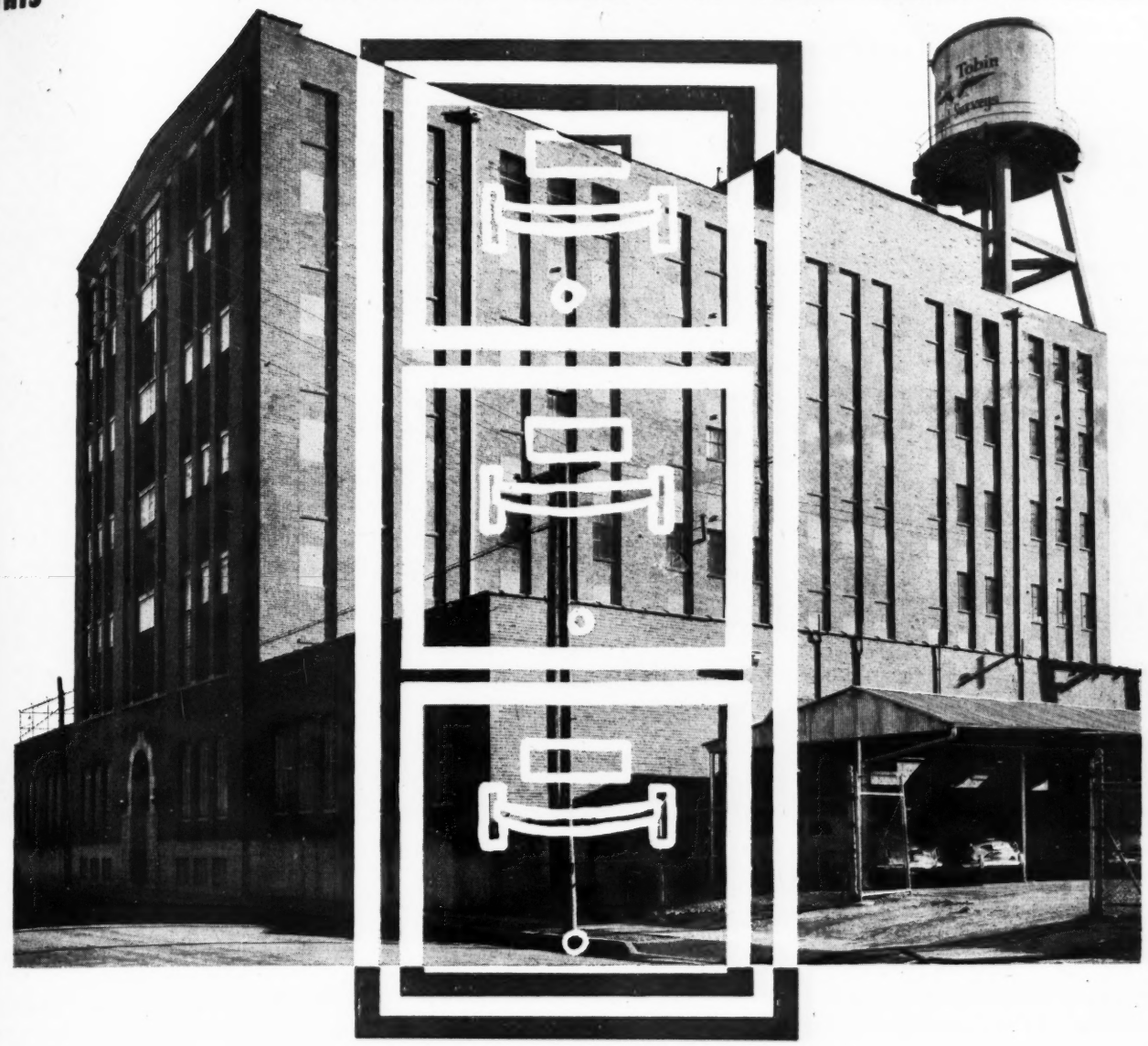

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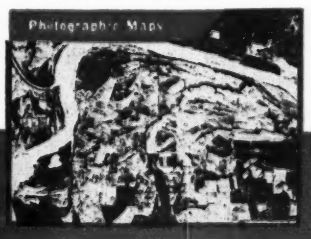


EDGAR TOBIN AERIAL SURVEYS

902 West Mistletoe San Antonio, Texas

A GAS PICTURE STORY

El Paso Natural's GAS TURBINE-DRIVEN CENTRIFUGAL COMPRESSOR STATIONS

Perched out in the middle of the west Texas desert, where water is scarce, is the new Cornudas compressor station of El Paso Natural Gas Co. Gas enters this station at approximately 600 psig from the original 26-in. line and a 30-in. loop, and is compressed to 800 psig in the two compressors initially installed. The gas passes through 30-in. suction and discharge headers. The pipeline right-of-way may be seen at right of picture.

TO provide additional supplies of fuel to satisfy the ravenous appetites of gas burners in California, El Paso (Texas) Natural Gas Co. is today in the midst of one of its biggest and most significant construction programs. Its size: 10 new compressor stations to boost deliveries by 300 MMcf per day. Its significance: Motive power will be furnished by the new gas turbine-driven centrifugal compressor.

Several similar installations have been made at gas compressor stations elsewhere, but never on such a grand scale.

The program is already entering the initial stage, which calls for the delivery of 100 MMcf above the 755 MMcf per day the company was delivering through its Texas line last year. The second stage, with the installation of more units and the opening of more new stations, will be completed in the fall, giving Pacific coast customers 200 MMcf per day more.*

*In order to receive the extra volumes, Southern Counties Gas Co., operator of the southern California companies' sector, is installing a similar compressor station in the California desert.

The construction pattern of the El Paso stations called for the erection of 10 stations, sandwiched in between the six existing reciprocating stations along the route. These fall in the following sequence:

Between the gas fields and the existing Guadalupe station, Pecos river station; between Guadalupe and El Paso station, Cornudas and Hueco stations; between El Paso and Deming station (New Mexico), Florida and Afton; between Deming and Willcox, Ariz., Lordsburg and San Simon; between Willcox and Tucson, Benson and Vail; and between Tucson and Gila, Casa Grande.

In two stages

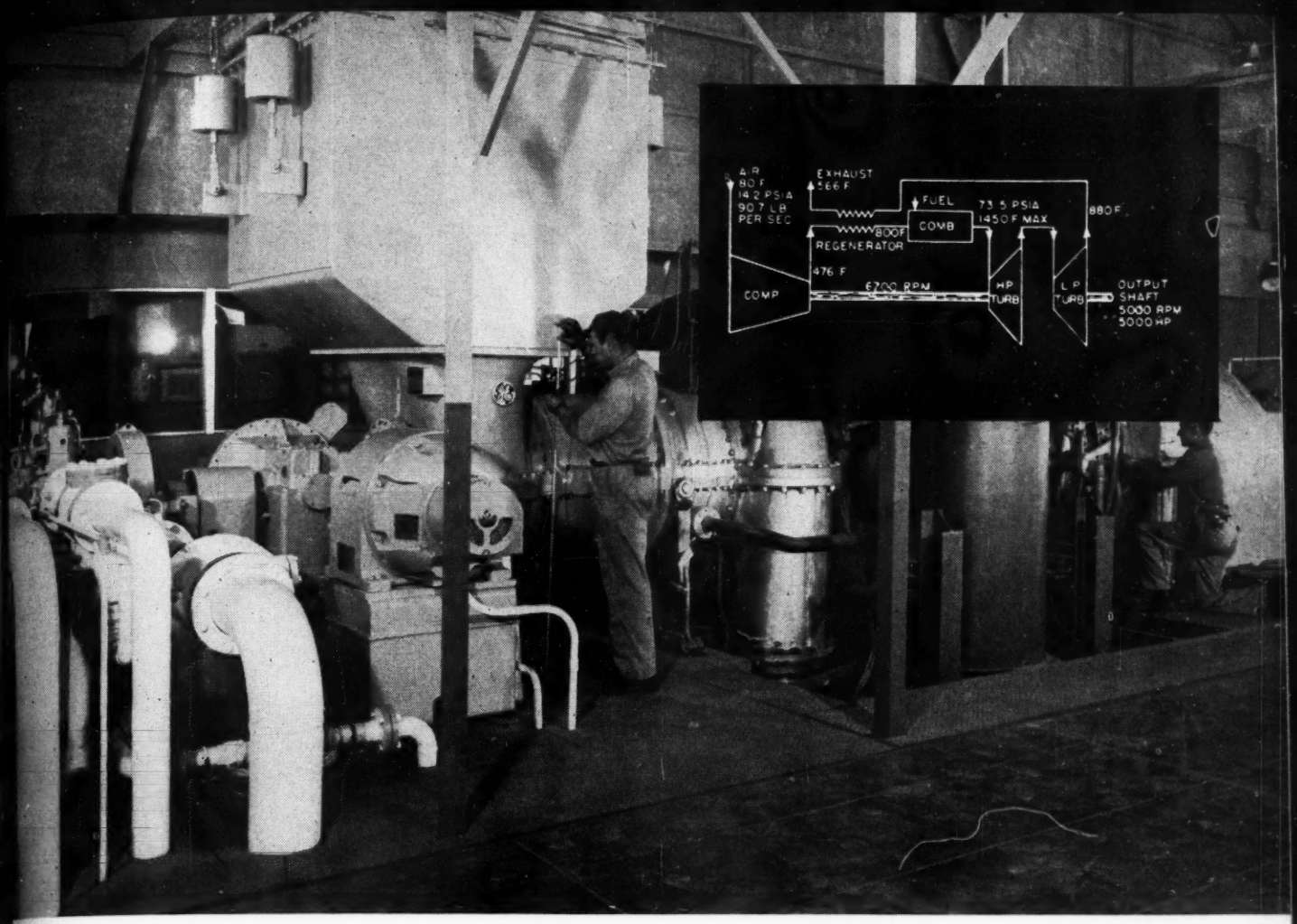
In the first stage, six stations with less than their final complement of compressors were scheduled for startup. These were Pecos, one compressor; Cornudas, two; Florida, one; Lordsburg, one; Benson, one; and Casa Grande, one.

In the second stage, four other stations —Hueco, Afton, San Simon, and Vail— each with three compressors—were to be placed in operation; additional compressors were scheduled for installation at the first six stations, to bring the final totals for all stations except Lordsburg and Benson to three turbines each.

The number of units selected for each station varied because of varying load requirements. In the final stage, less power will be needed at the western end of the line. In the initial stage, more capacity was needed at the far eastern end of the line; for Pecos station, the most easterly of the group, a loop provided this, but at Cornudas, the second station, two compressors were required immediately.

Several of the stations in the first group were pressed into use ahead of schedule, carrying the load for reciprocating units in other stations that were down for maintenance. Thus, at Lordsburg, Cornudas, and Casa Grande the compressors were on the line before the turn of the year. In January, Benson, Pecos, and Florida were being readied.

As of last month, Cornudas, Benson, and Lordsburg were up to complement.



No. 1 compressor unit at Cornudas. At the extreme left is shown the inlet piping to the oil cooler, together with the expansion gas piping, turbine generator set, and inlet air duct. To the immediate right of the man in the foreground are the discharge air fittings at the end of the axial flow compressor. Air moves down in the vertical runs at the back and out through the generator stack. Section extending from where the man is working to the air ducts comprises the axial flow compressor. The compressor is an almost completely self-sustaining unit, as cranking turbine, auxiliary generator, governor generator, and oil pump are driven off the shaft.

Pecos, Casa Grande, and Florida were scheduled for completion this month. Afton was set up for July completion, and Hueco, San Simon, and Vail were scheduled for August.

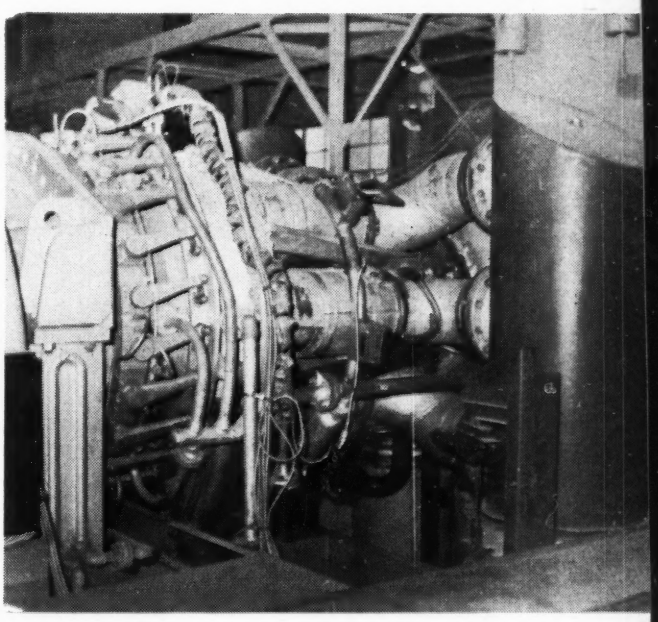
Factors in selection

Several factors influenced the decision to build the new stations as located, using the equipment as selected. The six existing stations were located about 100 miles apart, and the insertion of stations at approximately equal spacing between them would even out the flow. With two stations being added in most locations, spacing was reduced to 30-35 miles.

Adding to existing stations would have increased pressures above practical operating limits. Studies* showed that looping would have been more economical at higher rates of flow but more costly at rates up to the range of 300 MMcf. The line, incidentally, was already looped along its entire distance, with a second loop on the sector ahead of the Pecos station.

Operating costs with gas turbines are considerably less than with reciprocating

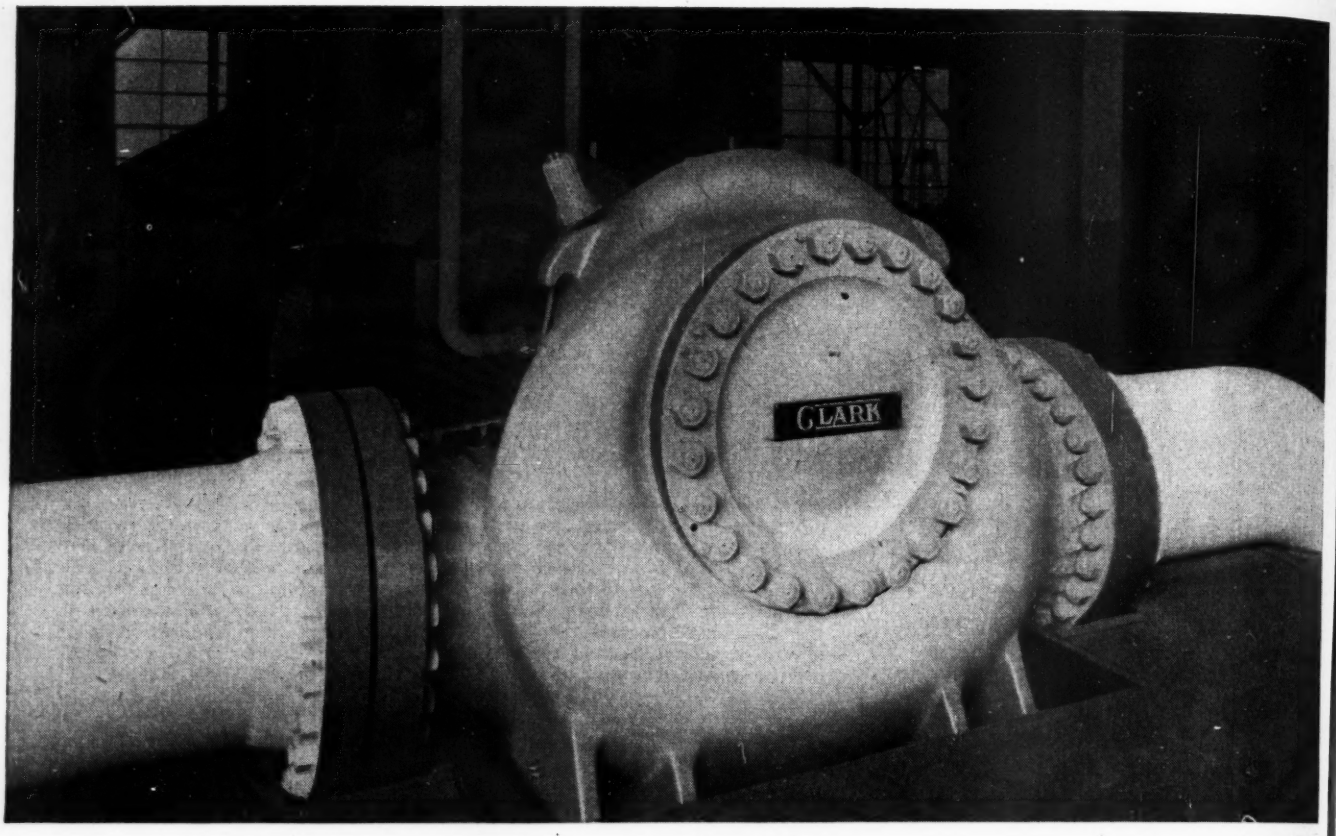
Inset above. Schematic diagram of 3500-kw, 5000-hp regenerative cycle gas turbine. Two separate in-line shafts separately operate the air compressor (directly off the high pressure gas turbine) and the low pressure load turbine. The dual shaft arrangement permits a constant horsepower output on the load compressor over a wide range of speeds. The high pressure turbine drives the compressor shaft at 6700 rpm; the low pressure turbine drives the second shaft at 5000 rpm, delivering 5000 hp.

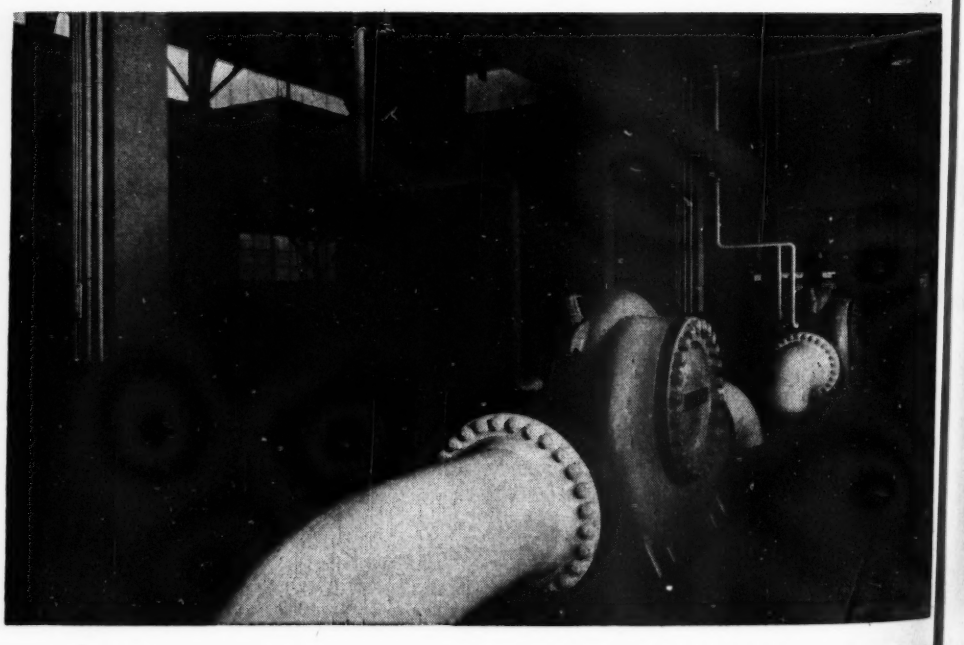


Turbine combustion tubes and inlet air header (vertical section). Fuel piping ring is visible in the center, circling the tubes. At left center are the variable nozzle linkages on the turbine. In the background are the inlet air ducts leading in from the air cleaners.

*For complete design data, see "Pumping Gas With Gas Turbines," by J. F. Eichelmann and J. S. Quill, *GAS*, July 1951, starting on p. 80.

EFFICIENCY





Two Clark 5000 BHP Centrifugal Pipeline Compressors installed at the Cornudas, Texas station of El Paso Natural Gas Company. Note the accessibility and simplified piping made possible by the straight-thru design. Six other Clark Centrifugals and 107 Clark "Right Angles" and "Big Angles" are used at other El Paso compressor stations.

TO SPARE!

Guaranteed efficiencies exceeded by the 8 Clark Centrifugal Pipeline Compressors in El Paso Natural Gas Company's main line stations

It's a fact: The eight Clark Single Seal Centrifugal Pipeline Compressors being operated by El Paso Natural Gas Company at Cornudas, Texas and three other stations are among the most efficient compressors ever built!

Again, the intensive Clark research and development program has paid off. Not only have the latest hydraulic and mechanical engineering principles been incorporated in the casing design, but these principles were first thoroughly proved in the shop under full-load field conditions by use of a closed loop test.

Of equal importance is the development of the Clark Balanced Flo Impeller which provides the greatest possible thru-put of gas with minimum power consumption.

Designed and tested to operate at higher than current working pressures, these Clark Centrifugal Pipeline Compressors can easily and efficiently handle future requirements with relatively simple internal modification. The extra rugged casing is built to take it!

Clark Centrifugal Pipeline Compressors — electric motor, gas and steam turbine driven — are today operating on many of the nation's largest pipelines.

Whatever your compressor problems — whether they involve centrifugal or reciprocating types — consult Clark for the unbiased answer. Clark builds *all* types.

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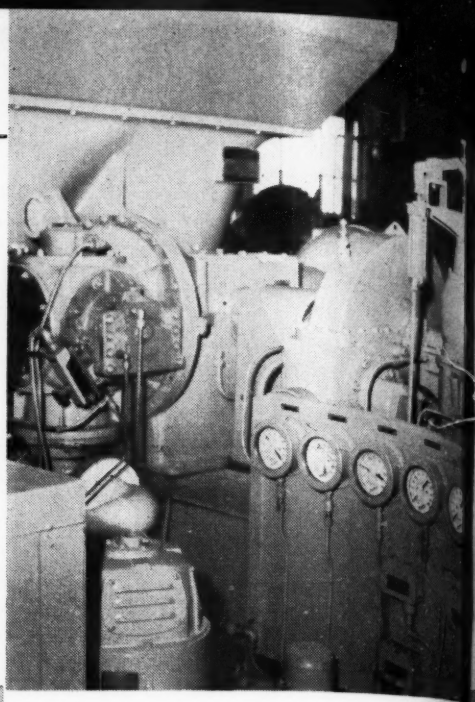
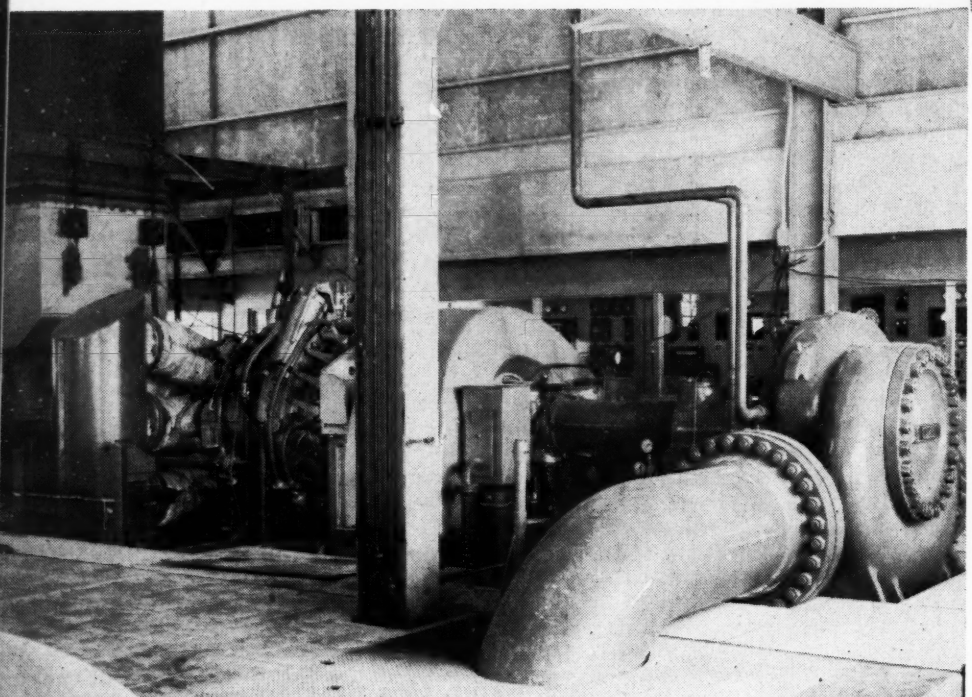
equipment. Five men (four shift operators and the superintendent) can man a turbine station, whereas 30 are required for a reciprocating station. Moreover, the stations can easily be operated automatically by remote supervisory control, which would effect even further savings.

Very little water and lubricating oil are needed. Engine maintenance costs are expected to be very low as there is no chance of oil breakdown with attendant ring wear and other troubles.

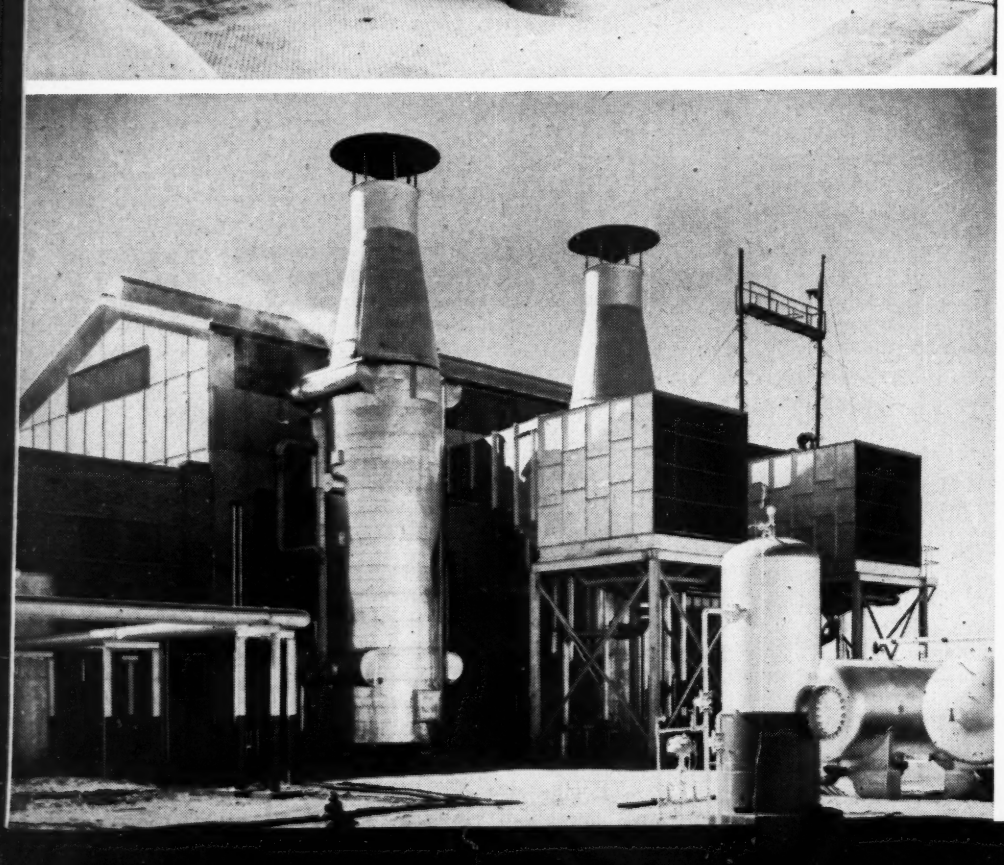
The only operational cost factor in favor of reciprocating equipment is a slight advantage in fuel consumption,



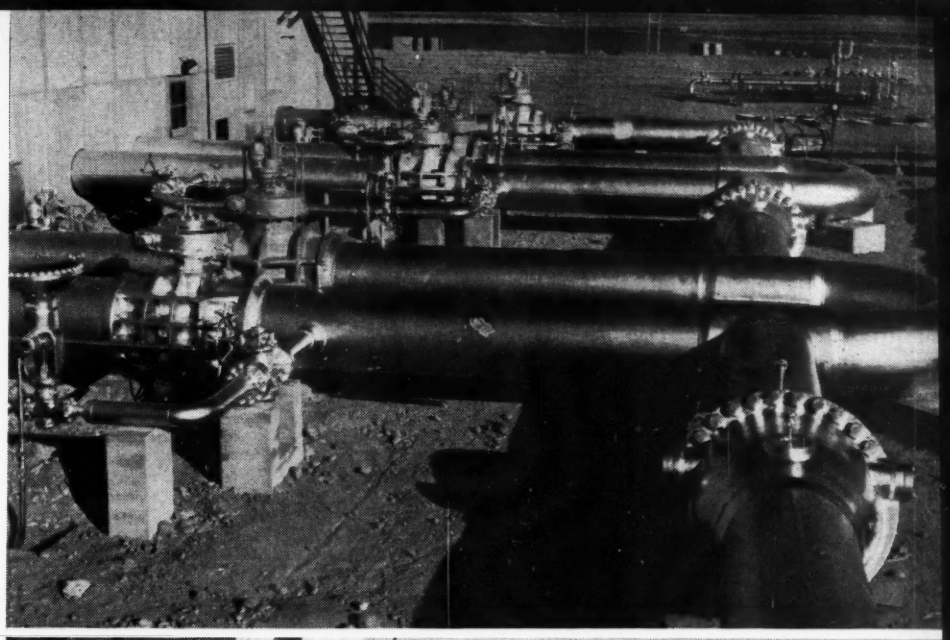
View of turbine area shows fuel and oil gauge board (foreground). Above are the starting turbine clutch and accessory drives; at far left is the fuel regulation system.



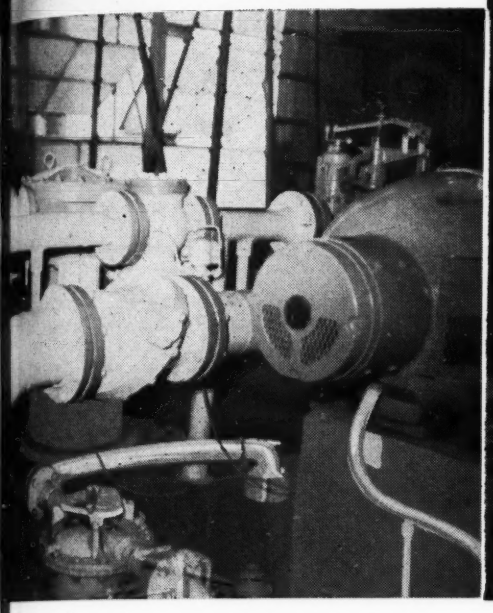
Another view of Cornudas No. 1 shows Clark compressor (Ingersoll-Rand and De Laval are also used). Impeller diameter of the compressor is 25 in. At far left is the inlet duct work carrying air from the air washer. To the right of it is the insulated duct work, which carries inlet air on the discharge side of the regenerator. The insulation is installed just before the combustion tubes. The large cylinder lying at an angle is the piston which operates the variable nozzles on the turbine; to the right of the nozzle linkage is the turbine exhaust hood. The shaft extension and some oil piping is shown between the end of the turbine and the compressor. Pipes rising vertically out of compressor are vents.

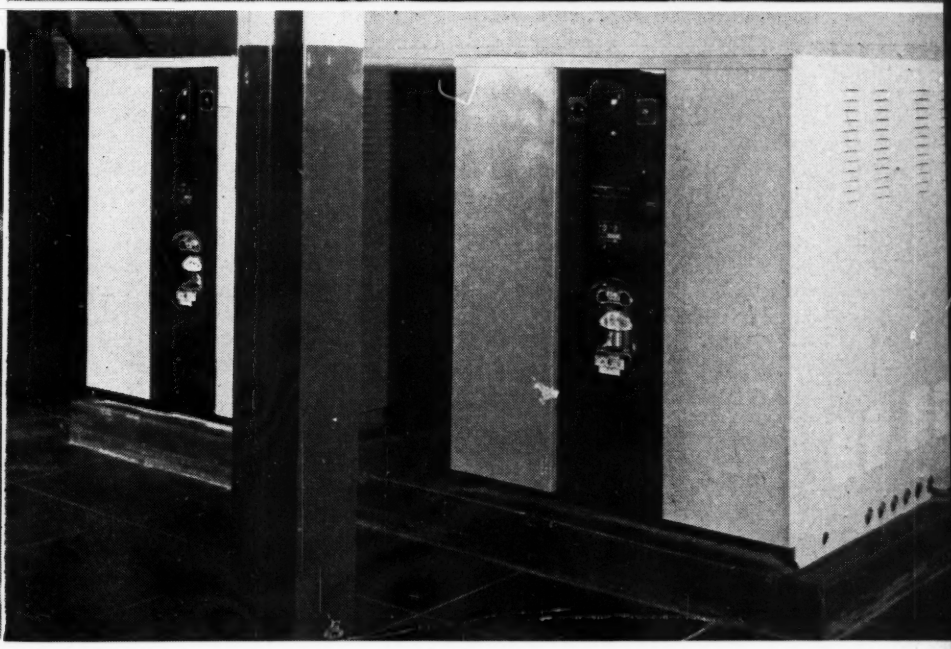


Incoming air to the compressors is cooled and washed in the evaporative coolers shown in the background. Availability of water determines whether the washers will be operated; with the hot, dusty desert conditions and prevailing low humidity, their use can boost horsepower output. They contain spray nozzles and an arrangement of baffles which prevents droplets of water from entering the turbine. About 10 to 12 gpm are required. In hot weather the air washers counteract a falling off in the output of the turbines by lowering the temperature of incoming air to wet bulb. Towering structures are the turbine regenerators, shell-and-tube arrangements containing 5000 1-in. tubes, which boost efficiency of the turbines 25% to 30%. Air leaving the compressors at a temperature of about 476° F passes through one of these regenerators, where it picks up heat from the exhaust before entering the combustion chambers at a temperature of 800°. In the foreground are the auxiliary air receiving tank and two water supply tanks.



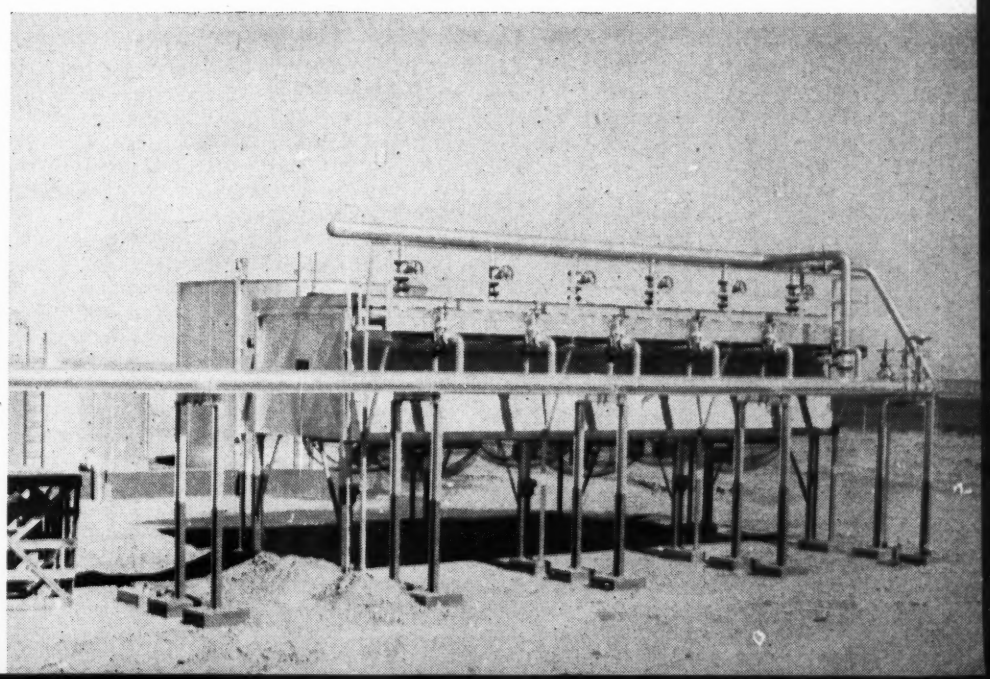
Suction and discharge piping detail. In the background is the suction header leading in from the scrubbers. In the center are the discharge and suction headers between compressors No. 1 & 2, and 2 & 3, each pair joined by 180° bends. The 30-in. discharge valves are equipped with EIM valve operators. On the straight bypass runs, 30-in. check valves are installed. At extreme left are the purge and loading regulator and piping. Expansion gas from suction header powers the small cranking turbine; after starting, this gas is blown to the atmosphere. In the distance are shown the meter runs and fuel headers.





Starting turbine area on the back of the turbine unit, showing in the foreground the 75-kw a.c. generator which takes off of the high pressure turbine shaft. (In subsequent installations, 125-kw units were used, so that auxiliary motors larger than 15 hp could be started in the station and all station auxiliaries could be carried by a single turbine, thus simplifying the auxiliary arrangement.)

Since the generator is geared to the axial compressor shaft, and since the frequency of the axial compressor varies with the load, generator frequency will also vary. The inductrol power pack shown here adjusts the voltage proportional to the frequency of the a.c. generator so that induction motors connected to it will not become over-excited as the frequency drops.



Griscom Russell-Fluor Fin Fan units cool the oil cooling water from all units. The six units, operating in pairs, are controlled off each individual panel board, and any pair may be bypassed as necessary. They contain approximately 400 sq ft of tube surface, 40% in excess of the 285-ft clean tube requirements. No gas cooling is required in the station, as with a high throughput and low head in the compressors the temperature ranges from 110° to 115°.

according to preliminary figures.

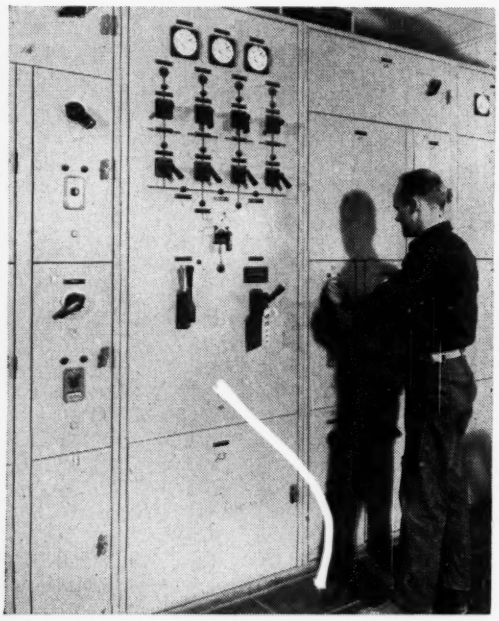
Water was a particularly vital determinant. Much of the line runs through desert where wells must be sunk many hundreds of feet. But Cornudas, for example, has such small water requirements that an old station located on another line in the El Paso system, just a few thousand yards away, easily supplies its needs.

All stations conform rather closely to the pattern of the Cornudas station, described in the photo captions.

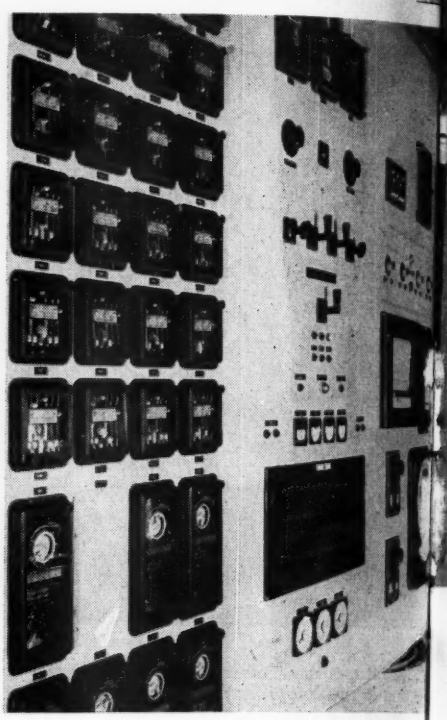
Lineup of Gould batteries, which are used for startups and standby, and provide an independent source of control power. These are charged through a motor generator set powered with an a.c. motor. At certain stations on the line, outside power sources are also available.

Motor generator sets (foreground) and the "phanocharger," an electronic control device used for charging the batteries.

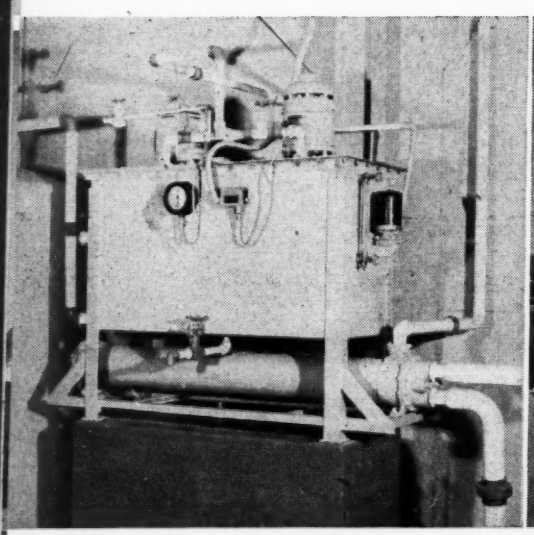
This battery distribution panel is operated in conjunction with the battery system.



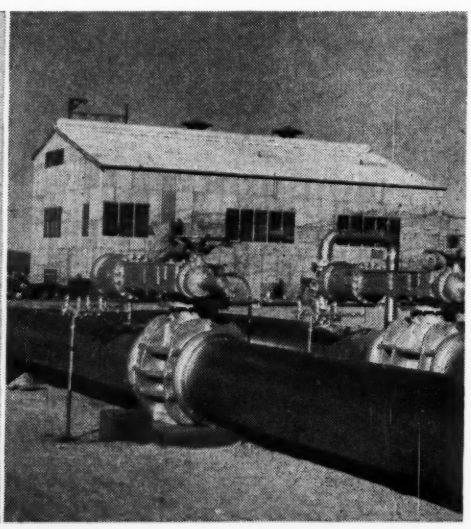
This station "Cabinetrol" and the power distribution centers for the plant and compressor areas control the source of power, whether it be from an outside source or from one or more of the turbines.



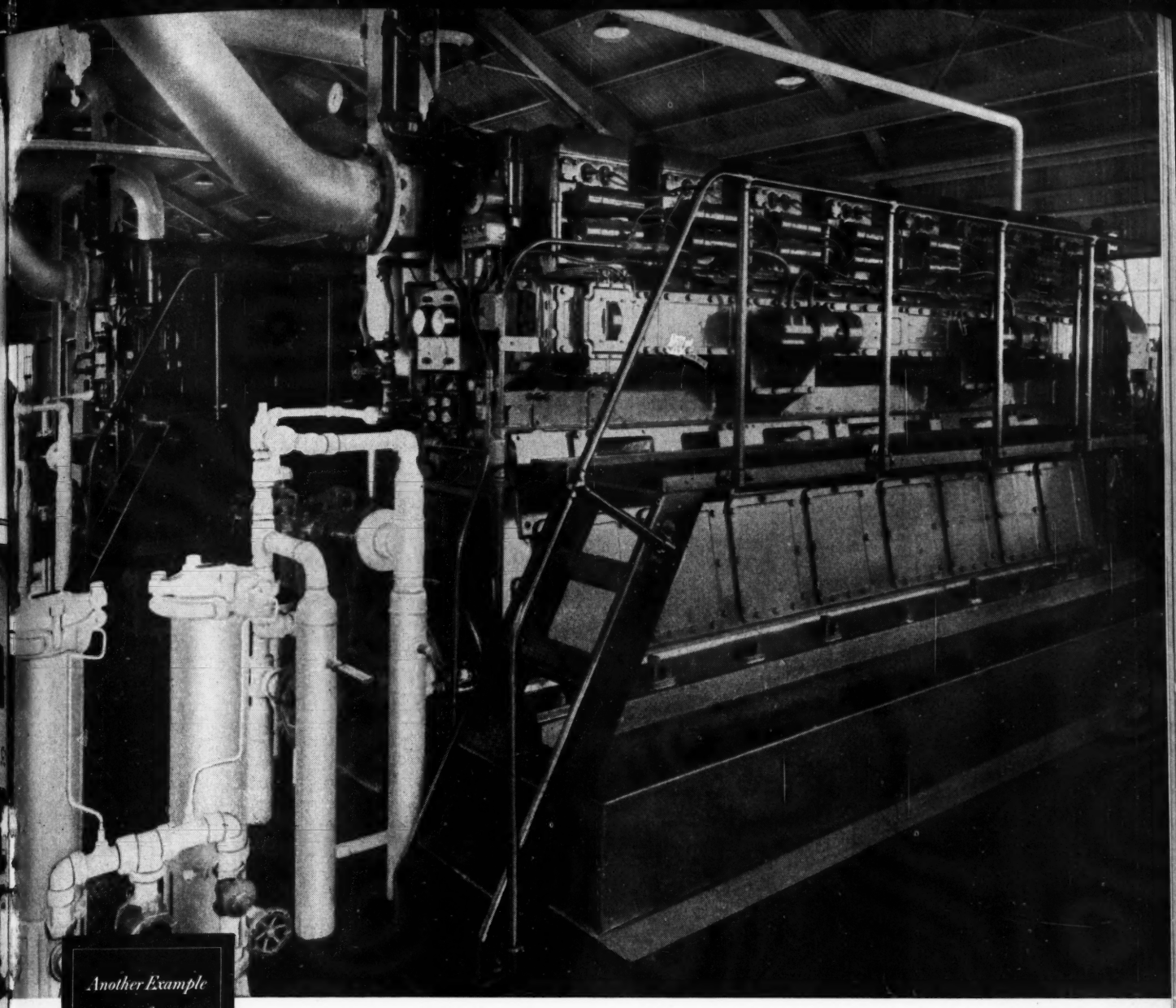
Overall control panel for the two units at the station. From left, beginning at the top, the first panel includes the station discharge recorder and the No. 1 unit Bailey pressure control. The vibration recorder which records vibration amplitudes from three separte points and the 48-point Brown temperature recorder are also in this panel. Below these two is located the automatic valve control for the No. 1 turbine unit. The two lower boxes in these panels are in conjunction with the vibration and temperature recorders. The center panel contains high pressure shaft and low pressure shaft rpm indicators and a variable nozzle angle indicator. The rectangular section at the top center of the panel is the 36-point annunciator drop panel. This will give an alarm or trip the turbine off of the line when trouble occurs at or in connection with any of 36 designated points. Below the annunciator are the generator dials and the hour operation totalizing timer. The lower section of the board is occupied by the automatic and manual fire, tests, and running controls for the No. 1 turbine. The next panel is for seven timing devices and 28 relays in the electrical circuits of the No. 1 turbine unit.



Nozzle cooling water pumps and storage tank. The nozzle cooling water heat exchanger is located beneath the pump reservoir.



Close-up of piston-operated station discharge valve.



Another Example of Efficient Power at Lower Cost

Cooper-Bessemer 600 hp, JS-8 gas engine generator units recently installed in Texas-Illinois stations at Marshall, Texas, and Malvern, Arkansas. Duplicate installations already installed on the line are located at New Caney, Texas, Biggers, Arkansas, and Hoffman, Illinois.

SHOWN here are some of the latest Cooper-Bessemer gas engine generating units installed in Texas-Illinois Natural Gas Pipeline Company's new pipeline. Modern JS's like these have now gone into five Texas-Illinois stations; will likewise power 4 more new stations as the year goes on.

Texas to Illinois experience with Cooper-Bessemer power dates back to 1929 when Cooper-Bessemers were first installed on the old Texoma and Natural Gas Pipeline Company of America lines. Like the modern JS's, these old engines were noted for dependability, low maintenance and high efficiency . . . and they're still running!

But progress plays tricks with standards. For example, the old Texas to Illinois engines offered 25% thermal efficiency — 10,000 B.T.U. consumption per bhp/hr. Today, you can install Cooper-Bessemers guaranteed not to exceed 6500 B.T.U. per bhp/hr.

Think what this unmatched 40% thermal efficiency means in dollars saved. It's equivalent to buying your gas at older, lower rates! Better check up on what you stand to gain and save with modern Cooper-Bessemers on the job.

by **Cooper-Bessemer**

MOUNT VERNON, OHIO AND GROVE CITY, PENNA.

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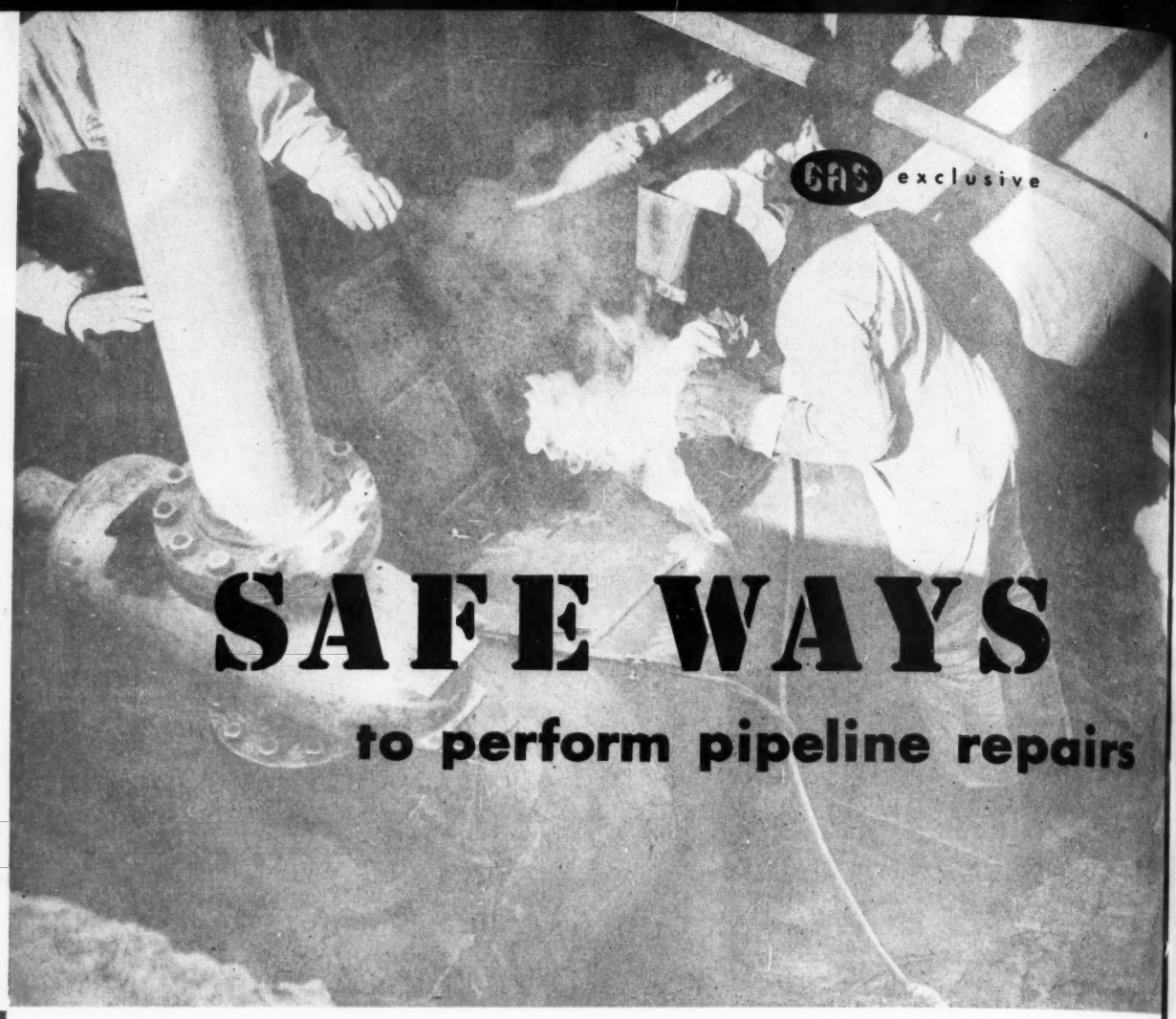

SAFE WAYS

to perform pipeline repairs

AS a means of providing a reliable guide for use in making pipeline repairs in a safe manner, the transmission committee of the Pacific Coast Gas Assn. compiled a booklet, "Performance of Work Under Conditions Where Personnel Is Exposed to Leaking Gas." The work was first presented at the association's transmission conference in 1952.

The step-by-step picture stories on the following pages represent an adaptation of one section of the booklet, "Performance of Repair." Three separate types of repairs are shown in detail—replacement of line using controlled fire, replacement of a section of line using controlled fire and inert gas purge, and replacement of line using gas main bags and inert purge. In all three cases the line is, of course, blown down.

These picture stories were developed through the cooperation of W. H. Krammes, chairman of the committee charged with preparation of the booklet, and Ralph Haun. Both men are Southern California Gas Co. executives.

Other types of repairs are also covered in the pamphlet, including the use of couplings and—when the job is being done under pressure—leak clamps and welded bands or patches. The pamphlet also outlines procedures for analyzing and preparing the job site, organizing and assembling men and materials, excavating, analyzing the leaking facility, restoring service, and backfilling and cleaning up.

Protection of personnel from hazards of leaking gas can be achieved using several different methods. Three such methods are described in pictorial sequences on the following pages.

TRUST Your Job to Friendly Hands

A Pipe Line Contractor LARGE Enough to Handle Any Job Economically . . . SMALL Enough to Enable ALL of Our Partners to Know Every Customer Personally

During 1952 our jobs included over 775 miles of pipe line . . . mostly in the Gulf Coast area of Texas, Louisiana, and Mississippi. Of this, 671 miles was 30" pipe or larger. Each Partner has well over twenty years experience in pipe line construction which includes thousands of miles of pipe line involving every known pipe line construction problem. Put this experience to work for you by calling on RIVER CONSTRUCTION CORPORATION for New Construction, Marine Crossings, Taking Up and Reconditioning Old Lines.

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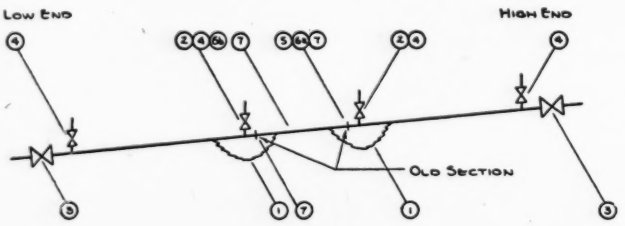
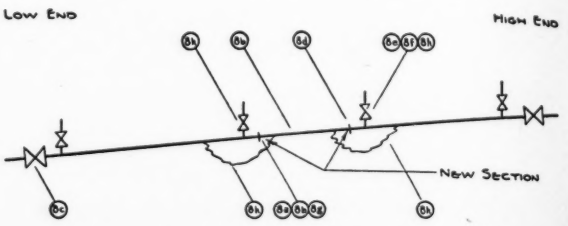
SAFE WAYS 1

Replacement of line using controlled fire

Outline of steps as recommended by PCGA transmission procedure committee



1. Bond section to be replaced. Shut down cathodic protection devices within section.
2. Install necessary blowdown connections, connections for fire control*, and any necessaray temporary connections on the old line adjacent to the tie-in points.
3. Dispatch personnel to stations at line valves to be closed, and close line valves.
4. Blow down line.
   (a) Use blowoff connections at line valves if available; otherwise use connections at tie-in points.
   (b) Blow down line until pressure reaches approximately atmosphere; close blowoffs.
5. Pierce top of pipe at higher end, and observe ability to control fire before proceeding with main cut.
6. Make cuts individually.
   (a) Make first cut at the higher end of section.
   (b) Control fire with blowoff valve near cut.
   (c) Complete cut, extinguish fire and tape cut. Make double cut to facilitate removal.
   (d) Make second cut at low end of section in the same manner.
7. Remove old section of line at tie-in points.
   (a) Temporarily close open ends of remaining line.



8. Install new section of line.
   (a) Remove temporary closure on low end of old main.
   (b) Align new section and tape joint at low end first.
   (c) Purge new section.
   (d) Remove temporary closure on high end, connect to old main and tape joint.
   (e) Open adjacent blowoff valve and complete purge.
   (f) Close blowoff valve.
   (g) Remove tape and weld joint at low end first. First pass of welding to proceed only at one location at a time. Control fire at weld by adjacent blowoff valve.
   (h) After first pass is completed at both tie-in points, remove blowoff stack and fittings, close openings and remove bond.
9. Purge old section; remove or abandon in place.
10. Restore service. Backfill and cleanup.

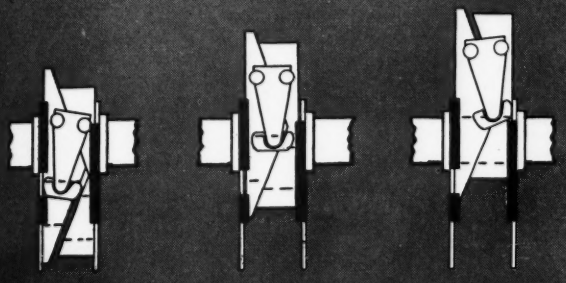
*The fire control connection must be of sufficient size to prevent a buildup of pressure and should be made on the section of line which is to remain.

When Southern California Gas Co. was required to lower a section of line for a highway relocation project on the east side of the city of Los Angeles, the controlled fire method was employed. Where the new highway is to be cut through, it was necessary to lower the pipe 26 in. in order to provide adequate cover. Instead of replacing the entire section, two short lengths, one at each end, were cut out and replaced by prefabricated bends, permitting the line to be lowered in place.

Layout as work began, looking downstream. Trench is carefully shored and pipe is given extra support by two large cranes, which were later used to lower in. Blowoff stack can be seen at far end of ditch; an identical stack was installed upstream from the job. Stack shown serves dual purpose: blowoff and fire control.

EXCLUSIVE LEVERLOCK ASSURES POSITIVE OPERATION in W-K-M VALVES

Leverlock action guarantees that W-K-M Valves always open and close efficiently. It controls neutral position of the gate and segment while opening or closing the valve . . . permits expansion of gate assembly *only* at proper time for seating in opened or closed position . . . assures positive controlled gate and segment pressure against *both* the upstream and downstream seats.



Gate and segment in closed position. Neutral position. Completely open.

The basic W-K-M Through Conduit Design and expanding gate have proved unequalled in the most severe tests. These, combined with Leverlock operation, no surge operation, simple maintenance, quick overhaul in the field, make W-K-M Pipeline Valves top standard for the industry. When you want dependable valve performance, specify W-K-M Valves all the way.

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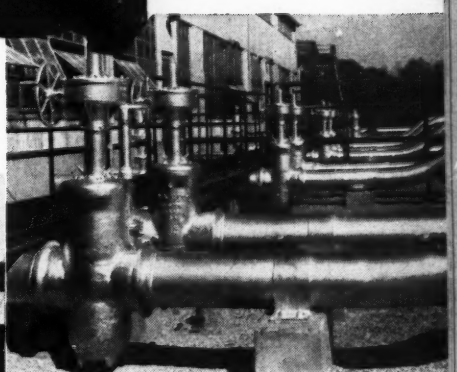
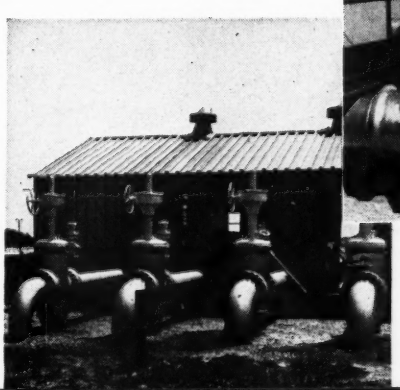
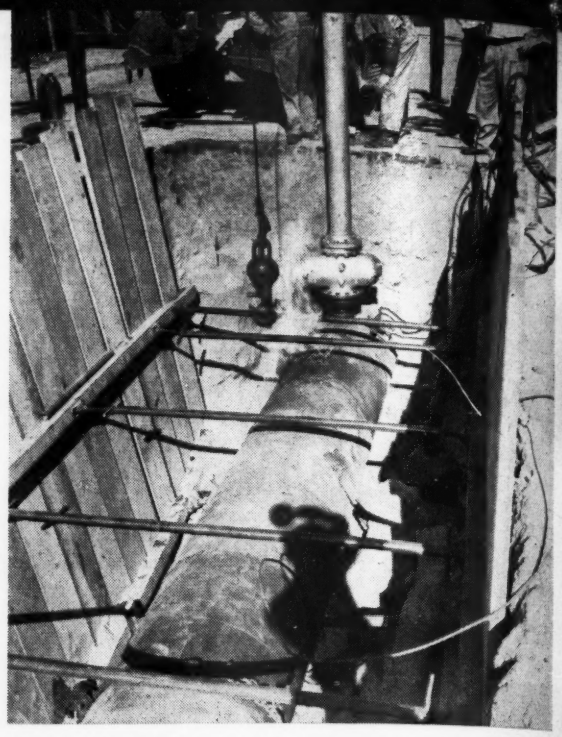


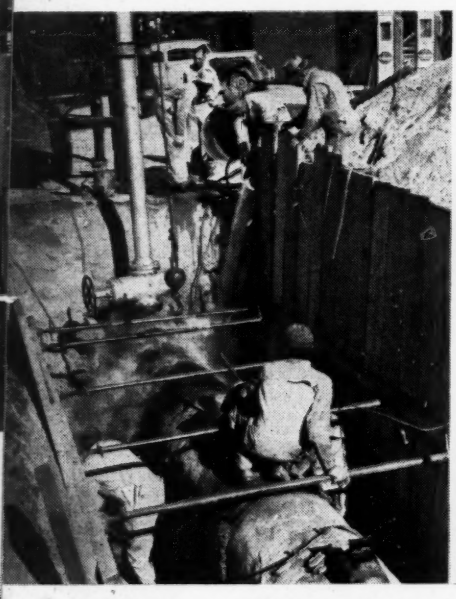


Replacement of line using controlled fire

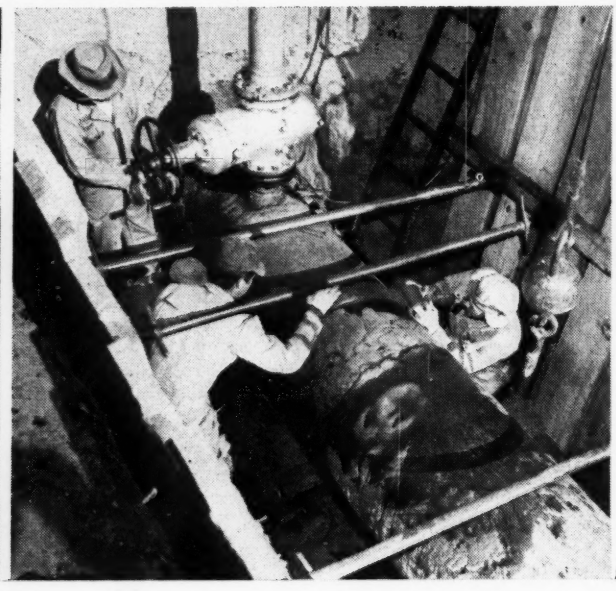
Several thousand feet upstream, personnel was stationed at the line valve to be closed. Radio contact was maintained with the job foreman (at right) as the blowdown proceeded. Line was blown down until pressure approximated that of the atmosphere. Valve at lower end was closed, fire control being done with upstream valve.



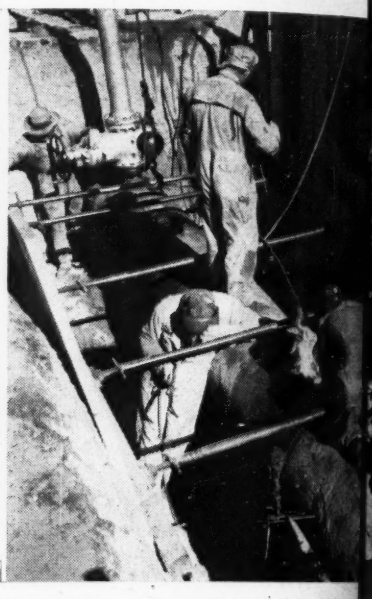
After top of pipe had been pierced at upstream end, welder observed ability to control fire before proceeding with the main cut.



Workmen standing by with fire fighting apparatus extinguished fire in first cut.



When fire was extinguished, the cut was taped. Small steel plate welded on top of pipe and bridging cut helped hold pipe in place.

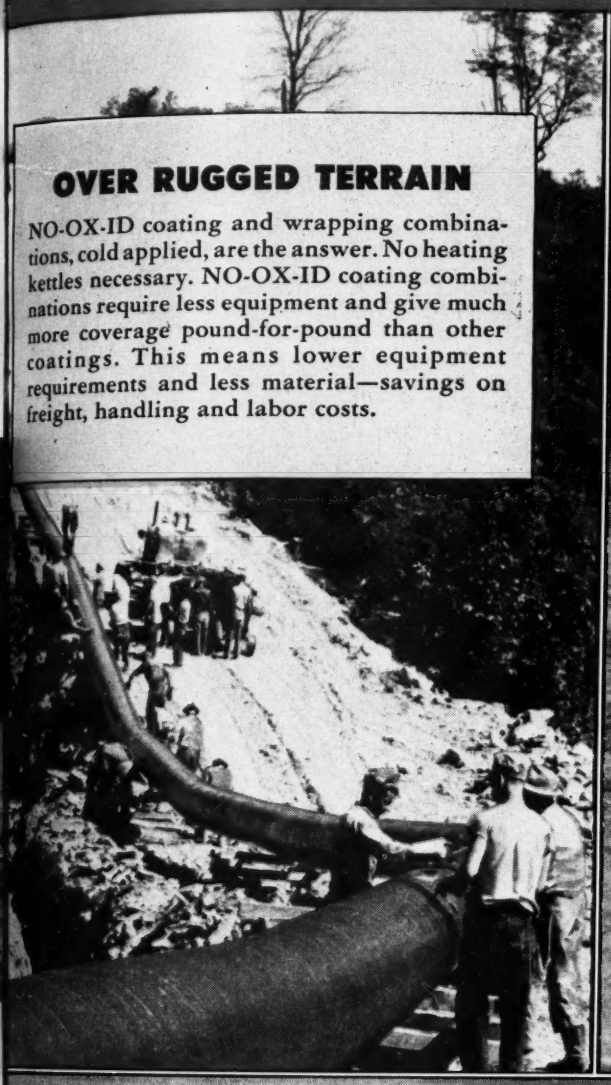


Second cut was made in a similar fashion, the welder first piercing top of pipe in order to observe scope of fire.

Downstream, the cutting operation was repeated. First cut was made at the point closest to the blowdown stack. Upstream valve was completely closed; fire was controlled by pinching or opening downstream valve.

Completed cut was taped at lower end.

PIPELINES everywhere!



OVER RUGGED TERRAIN

NO-OX-ID coating and wrapping combinations, cold applied, are the answer. No heating kettles necessary. NO-OX-ID coating combinations require less equipment and give much more coverage pound-for-pound than other coatings. This means lower equipment requirements and less material—savings on freight, handling and labor costs.

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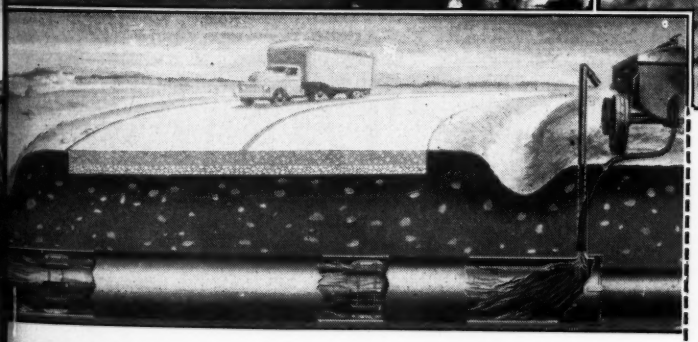
NO-OX-ID protection is pipeline insurance at its best. A NO-OX-ID coating of 1/32", shielded with a Reinforced NO-OX-IDized Wrapper, is adequate. Coating crews like to work with NO-OX-ID because there are no objectionable fumes. NO-OX-ID combinations assure positive, lasting protection. There are NO-OX-IDs for hot or cold application—by hand, by stationary coating machines at mill or railhead, or by traveling-type machines for over-the-ditch operations.



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...X-ID CM Casing Filler does the job. Contains additives, ...tors and wetting agents to provide positive corrosion pro... to both the exterior wall of the carrier pipe and the inside ...e of the casing. Bulletin 3079 tells the complete story.

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Please send

- ☐ a copy of "Protecting Underground Pipe from Corrosion with NO-OX-ID and NO-OX-IDized Wrappers.
- ☐ Bulletin 3079.
- ☐ Have a Dearborn Engineer call.

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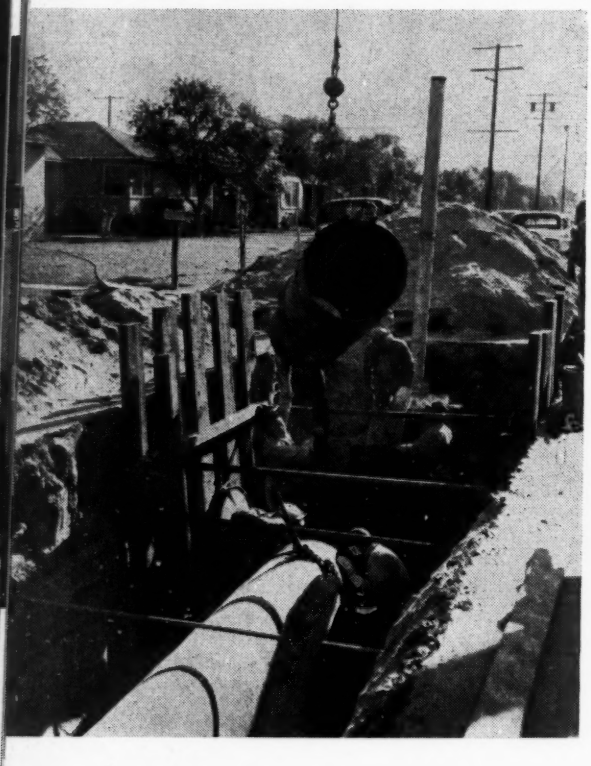
Replacement of line using controlled fire

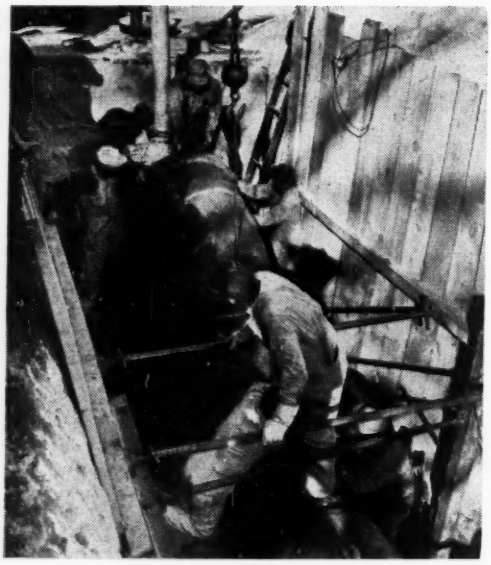
After section at downstream end had been removed, workmen inserted a special stopper or "nightcap" into open ends of pipe, first upstream, then downstream.

Fire control valve at upstream end was opened to prevent buildup of pressure behind nightcap after it had been tightened in place.



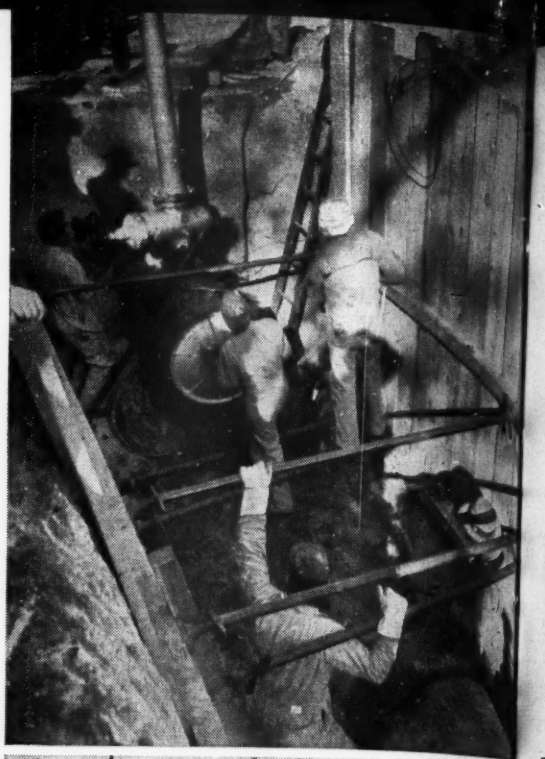
After second cut had been made, downstream section was removed and stoppers were inserted in the open ends of pipe.

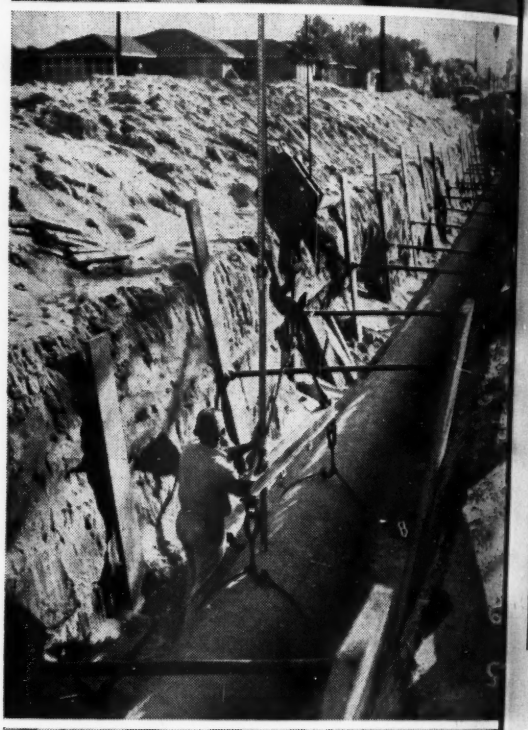
Pipe was lowered to bottom of trench as surveyors check position.

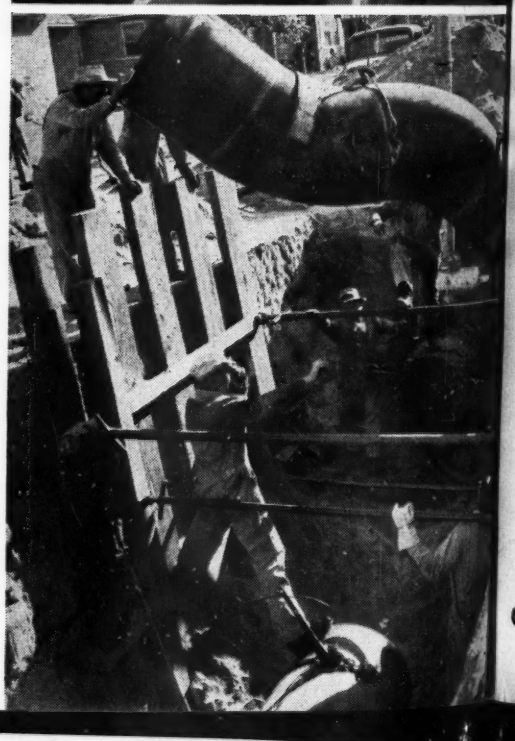


New section at upstream end was next lowered into place and taped.

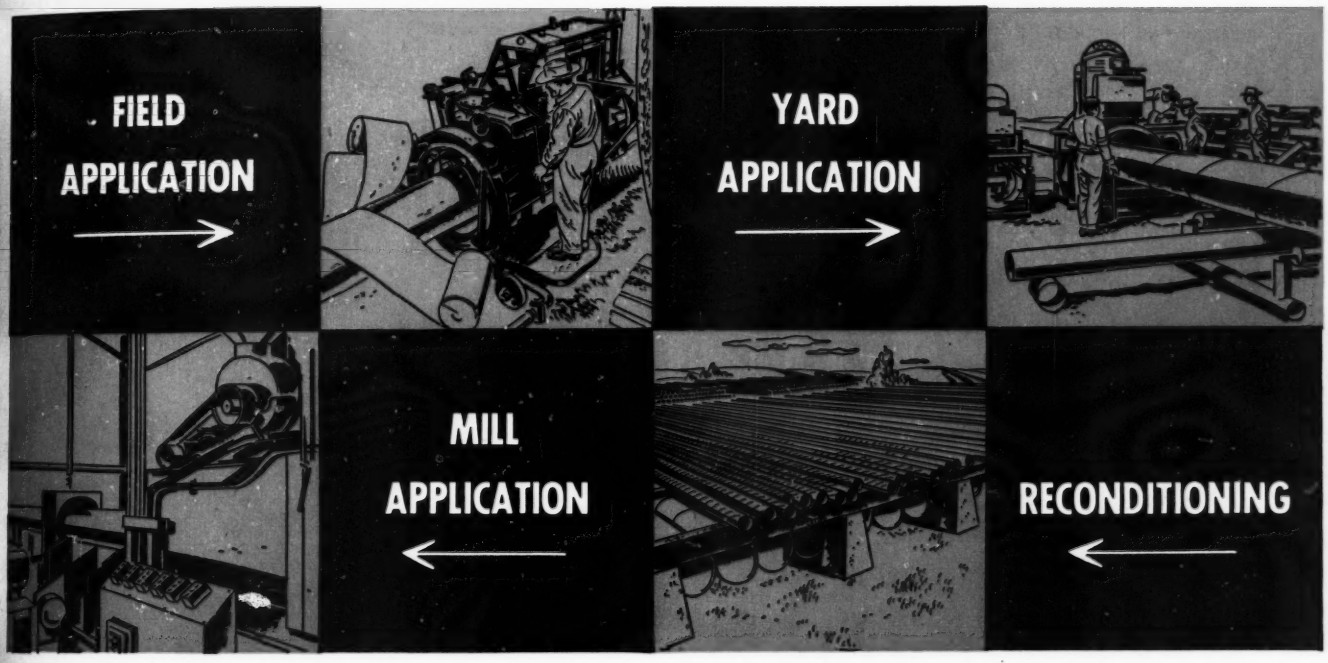
New section at downstream end was lowered into place and taped.







Performs better
in every use because
It meets Rigid Specifications



HOW are you coating your next pipeline? Over the ditch? In the mill? In a yard or as a reconditioning job? Whatever the method, be sure to use an enamel that's *formulated to specifications* . . . and guaranteed by close laboratory and production control to meet them.

Pitt Chem Modified Enamel is just such a coating—an all-weather, all-year enamel that withstands atmospheric temperatures as low as 0°F without cracking. Underground it provides optimum protection against soil conditions and elevated service temperatures.

When you use Pitt Chem Modified, you can rely on better, faster coating above ground and longer-lasting protection below ground . . . because every drum meets specifications. Write today for data sheets . . . or any other help you need to improve your pipeline protection.

- ★ Standard Grade Tar Base Enamel
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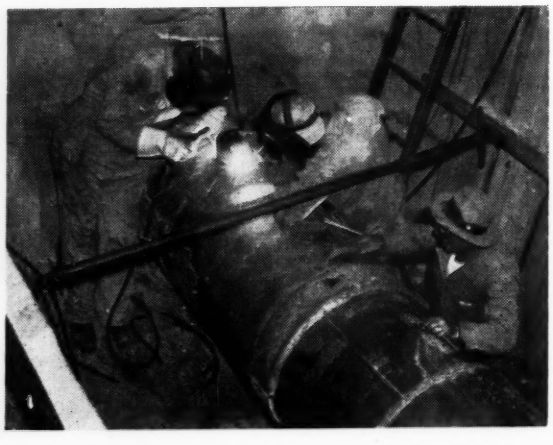
New sections were fit and held in place with load binders. Lower half-segment of wedding ring was slipped into place and held with load binders. Then upstream fire control valve was closed and downstream valve opened to purge new sections.

Welders at upstream end made first pass. After this was done on both cuts at upper end, the other two welders started to make first pass at lower end while welding continued at upper end.

After first pass was completed at both ends, the blow-down stack was removed.

The fire control valve was removed, and a bull plug was screwed in at point where fire control valve had been inserted.



Bull plug was finally welded into place.

The next method, using controlled fire and inert gas purge, is demonstrated in the next section, beginning on page 132.

Can you handle jobs like these for $1.85 per hr.?

(Plus Operator's Wages)

you can with a BANTAM®!

Owners' records prove that the average cost of owning and operating a truck-mounted Bantam T-35 Back Hoe is approximately *$1.85 per hr.* (Including depreciation, gasoline, maintenance, etc.)

This means that *hundreds* of pipeline and compressor station jobs, formerly handled at high cost by hand labor crews or single-purpose tools, can now be *mechanized* at a big saving in time and money with the low-cost Bantam method.

New Bantam T-35 Hoe *digs up to 100' of 5' trench per hr.* with full range of bucket sizes . . . has fast-change hoist and back-fill attachments (extra) for handling complete pipe installation with same machine. In addition, Bantam's fast job-to-job mobility, interchangeable *6-ton crane boom,* and new remote control, let you handle a wide range of jobs in half the time required by other methods.

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New Bulletin TCR-201 gives you all the facts you want to know about the new Bantam T-35 truck crane. Send for it today.

Pipeline Construction

1. Unloading pipe from cars to stringing trucks — and from trucks to right-of-way.
2. Excavating stream crossings and ravines.
3. Constructing small gathering lines.
4. Backfilling main trunk lines.
5. Loading and unloading welding equipment, dope kettles, barrels of coating enamel, etc.
6. Trenching in tough ground or other locations impractical for trenchers.
7. General clearing and clean-up.

Station Work

1. General excavating for storage tanks, buildings, etc.
2. Digging fire breaks.
3. Setting compressors, engines, pumps, generators, valves, etc.
4. Erecting steel, pouring concrete, etc.

Pipeline Maintenance

1. Excavating bell holes.
2. Uncovering short line sections.
3. Handling emergency leak repairs (excavation, pipe placement and backfill).

SB-H-23

SCHIELD Bantam Co.

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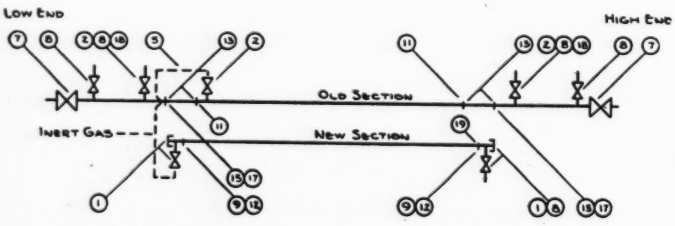
World's largest producer of truck-mounted cranes and excavators

SAFE WAYS 2

Replacement of line with controlled fire and inert gas purge

Outline of steps as recommended by PCGA transmission procedure committee

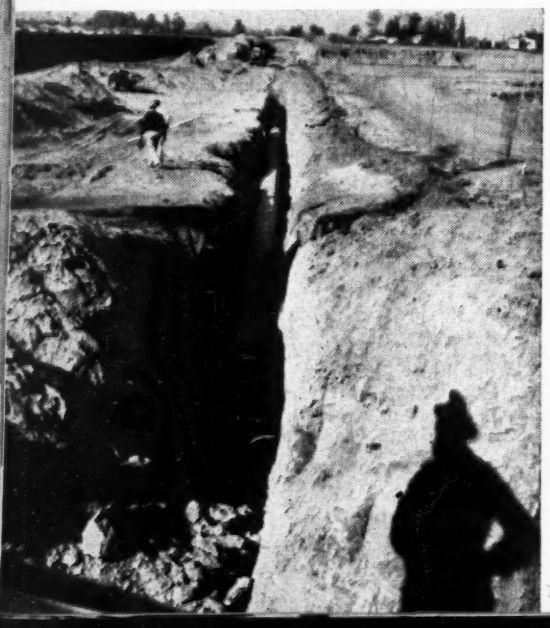


1. Install bullplugs on end of new line. Connections for air test and for inert gas purge should be installed near the bullplugs in order to be removed with the bullplugs.
2. Install necessary blowdown connections, connection for fire controls* and any necessary temporary connections on the old line adjacent to the tie-in points.
3. Test new line at desired pressure with overnight standup test.
4. Bond section to be installed and section to be removed. Shut down cathodic protection devices in vicinity.
5. Tie in temporary connections between the old and new lines, at lower end.
6. Inject inert slug into new line followed immediately by gas from old line through temporary connection**.
7. Dispatch personnel to stations at line valves to be closed, and close line valves.
8. Blow down line.
   (a) Use blowoff at line valves if available; otherwise use connections at tie-in points.
   (b) Blow down line until pressure is approximately atmospheric. Blow down new section of line at same time and then close blowoffs.
9. Cut bullplugs from new line individually. Cut bullplugs at highest level first, leave in place and tape cuts. The cuts are thus temporarily covered with wide friction tape to prevent excessive leakage. When necessary, keep small amount of gas passing in to new line and control fire by valve on temporary connection while cutting. Remove temporary connection after both bullplugs have been cut.
10. Pierce top of old line at tie-in point at highest elevation with lighted cutting torch and observe ability to control fire before proceeding with main cut.
11. Make cuts for removal of section individually, extinguish fire, leave section in place and tape as cut, controlling fire by valve on blowoff stack near cut.
12. Remove the bullplug (previously cut and taped) from new line and temporarily close end of new main.
13. Remove section of old line at tie-in point and temporarily close ends of remaining line.
14. Remove temporary closure; end of old line to be tied in to new line.
15. Install new section and tape joints (see steps **19** and **20** if tie-in fittings are used).
16. Repeat same procedure at lower opposite end of new line.
17. Remove tape and weld joints at low end first. First pass of welding to proceed only at one location at a time. Control fire at weld by adjacent blowoff valve.
18. After first pass is completed at both tie-in points, remove adjacent temporary blowoff stack and fittings, close opening, and remove bond cable.
19. If tie-in fitting used:
    (a) Install and purge tie-in fitting.
20. Remove temporary closure from new line, connect to tie-in fitting and tape joints.
21. Purge old section of line with inert slug followed by air. Remove or abandon in place.
22. Restore service. Backfill and cleanup.

*The fire control connection must be of sufficient size to prevent a buildup of pressure and should be made on the section of line which is to remain.

**In order to create and maintain a slug of the inert gas in the pipeline, it is necessary to move the inert gas at a velocity above the critical velocity, i.e., in turbulent flow. The theoretical amount necessary to maintain an inert slug for any size pipeline may be made by reference to the curves included in the paper, "Combustible Gas Mixtures in Pipelines," written by Mr. Elting Henderson and published in Vol. 32 (1941) "Proceedings of the Pacific Coast Gas Assn."

A line needed both relocation and lowering and because the sections involved were of considerable length, the method using controlled fire and inert gas purge was employed. The section to be taken up contained a bend, and was approximately 750 ft in length; the new section cut across it, in effect short-cutting the old route. Lowering to a depth of several feet was also necessary.



The new section is shown in place, with an overnight cap in place to keep out dust and dirt. A portion of the old section is visible in the foreground.

Closeup of the new section in place with blowdown valve installed. The line had previously been purged of air and filled with gas for an overnight test. Note bonding cable.

DOW

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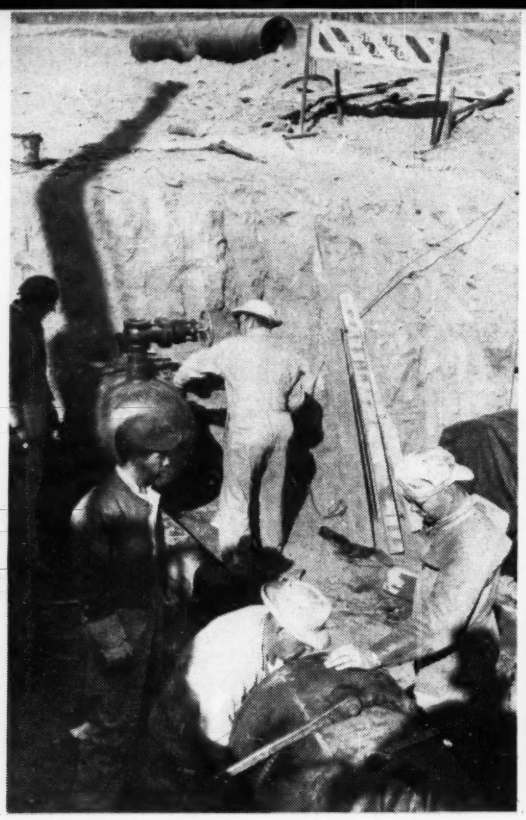
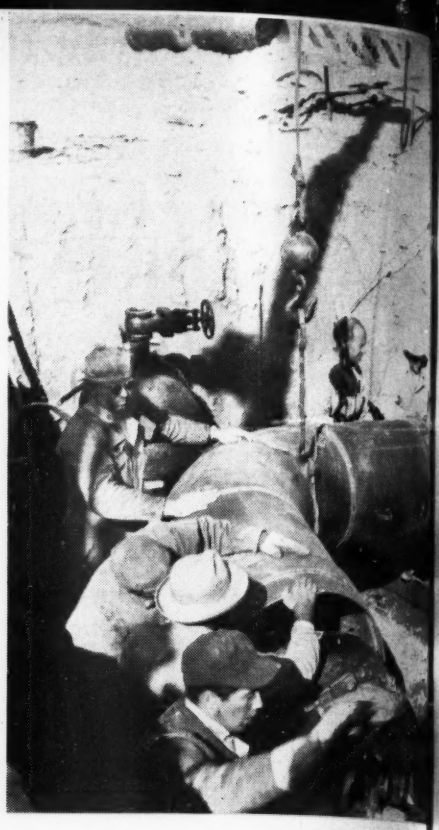
DOW

A section of the old line was cut out and the overnight cap inserted. New section had been blown down and bullplug was being moved from new to old section preparatory to purging the latter.



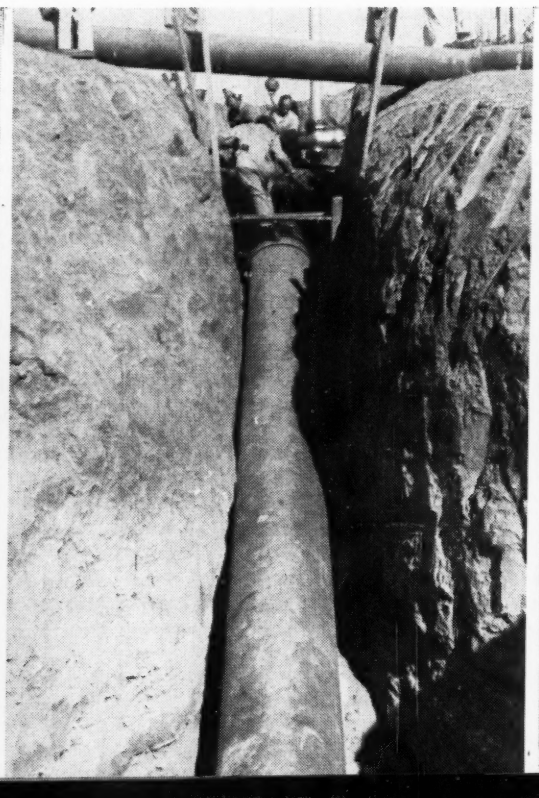
Bullplug in place on old section. Temporary closure was made on new section using wet canvas.



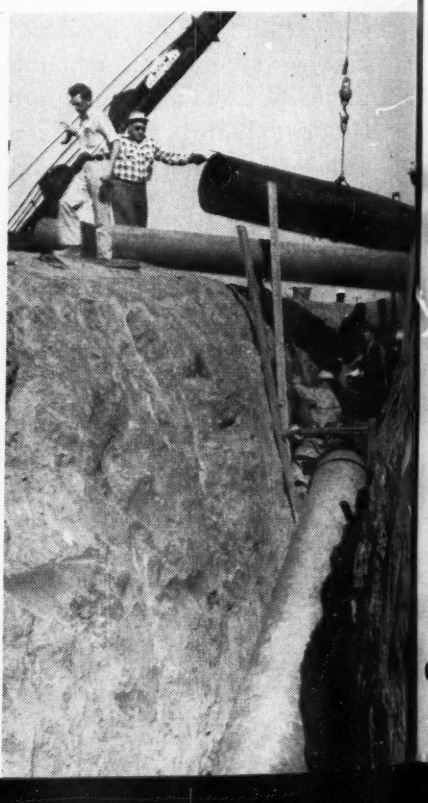
A prefabricated connecting section with wedding bands was next lowered into place.

Replacement of line with controlled fire and inert gas purge

Connecting section shown clamped in place, ready for welding at lower end. Note that section is taped and will not be welded until upper connecting section has been lowered in. First welding pass was made at upper end of entire new section.



New section in place ready for tie-in at upper end. Fire control valve on part of old section which will remain is shown in background. Overhead pipe shown has no connection with this job.



Cut has been made at upper end and old section removed to allow insertion of tie-in piece.

RIGHT AT THE BEGINNING—

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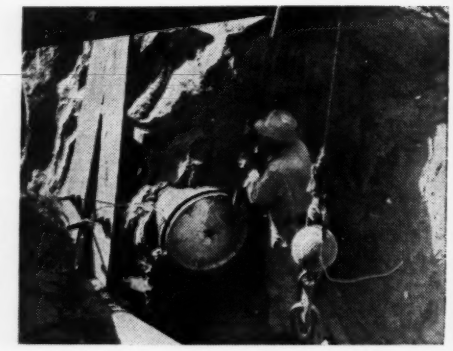
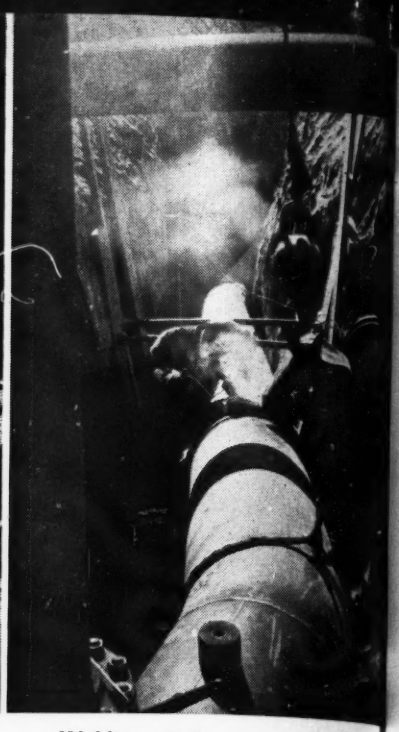
Replacement of line with controlled fire and inert gas purge



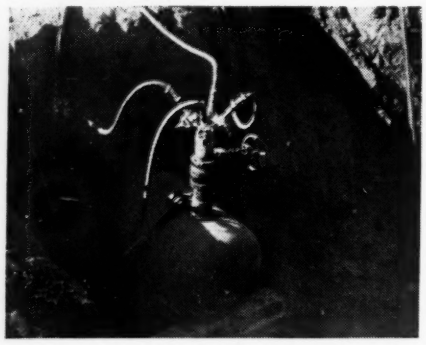
Overnight cap was set in place in old section at upper end. Vent inserted in cap prevented buildup of pressure behind it. Bonding cable appears at left.

Connecting section was then clamped in place at upper end and made ready for welding.



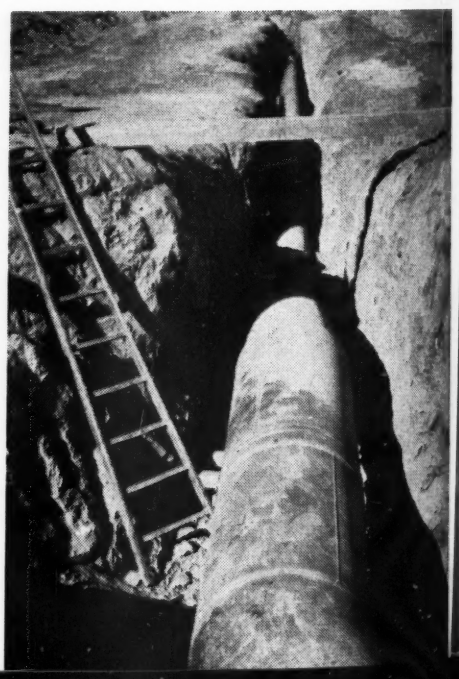
Welding tie-in at upper end.

Purge fitting was attached to old section of line ready for insertion of nitrogen "slug," to be followed by air.



Closeup of purge fitting shows three hoses used for air, one for nitrogen. This type of arrangement allows fast changeover from nitrogen to air, or from nitrogen to gas.

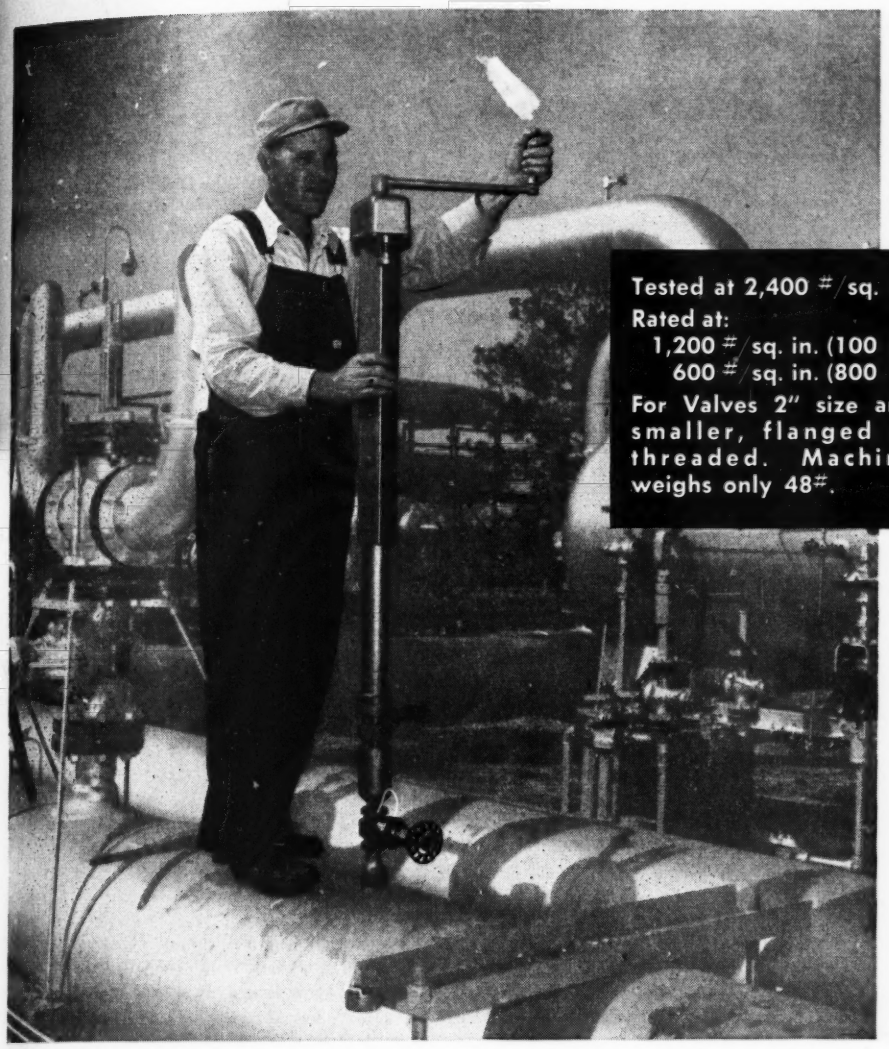
Closeup of pressure gauge and valve used to control rate of nitrogen flow into pipe.



New section in place and welded, ready for backfill.

The use of gas main bags with inert purge as a recommended method is demonstrated in the section beginning on page 138.

here's the new . . . . .



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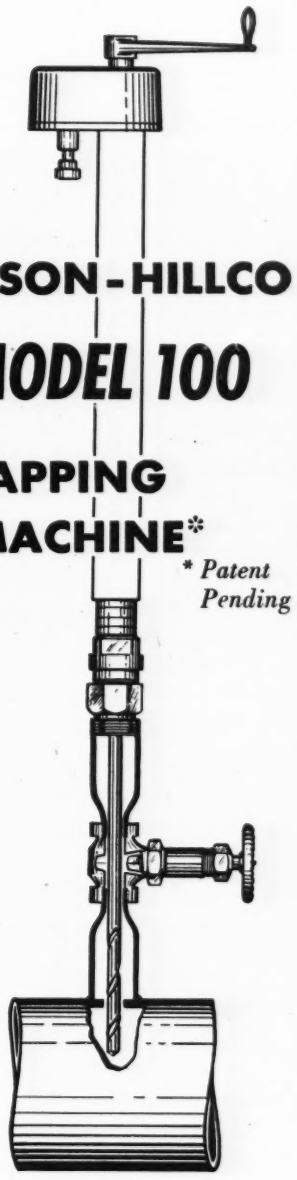

WmSON-HILLCO Model 100 Tapping Machines are used:

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- For opening flow connections to oil, gasoline, gas or steam lines without shutdown and without hazard.
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- Automatic feed assures trouble-free taps, made quickly with minimum effort.
- Boring bar travel — 24 inches. Ample for thickest wall and longest valves.
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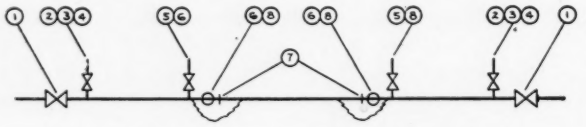
SAFE WAYS 3

Replacement of line using gas main bags and inert gas purge

Outline of steps as recommended by PCGA transmission procedure committee

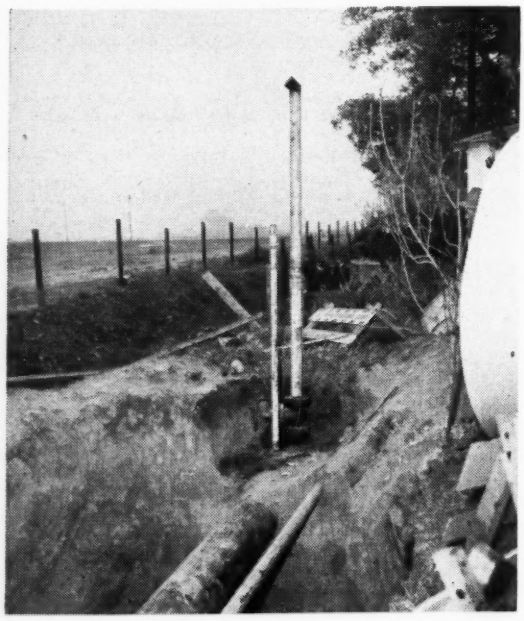


1. Close section (block) valves in line.
2. Install connections for inert gas purge adjacent to section (block) valves and to the side of the valve on which the cut is to be made.
3. Blow down the line.
4. Purge line between section (block) valves with inert gas.
5. Install connections for insertion of gas main bags.
   (a) Make these connections on the main to remain in the ground and at sufficient distance from the cut to allow a minimum of 3 ft between the expanded bag and the cut.
   (b) Allow valves at these points to remain open to exhaust any possible leakage by the section valves.
   (c) Regulate these valves to prevent air from being drawn into the main.
6. Inflate gas main bags. Use inerts.
7. Proceed with cutting, removal, and installation of new section of line as previously described.
8. Remove gas main bags and fittings; install and weld in permanent bullplugs.
9. Displace inert and air with gas.
10. Restore service. Backfill and cleanup.

When Southern California Gas Co. needed to relocate a line in North Long Beach, Calif., to permit the construction of a link in the Los Angeles area's freeway system, the method employing gas main bags and inert gas purge was used.

The problem was to lower the line several feet at a point where the freeway will traverse it. The technique selected prevents contact between gas and air and thus eliminates any hazards of fire or explosion. Sequence of photos shows the steps in the operation.

Shutoff was made at gate valves on the upstream and downstream sides.



The 4-in. blowoff stack is shown at the downstream end of the job site. Blowdown under way. Smaller stack is a 2-in. vent used in connection with the nitrogen purge.

The blowoff stack and valve were next removed and the tee was installed to permit insertion of the bag and the valve leakage vent stack.

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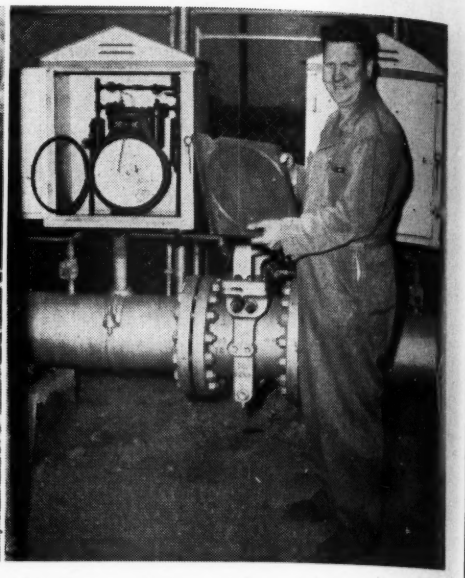
HOUSTON, TEXAS

Replacement of line using gas main bags and inert gas purge

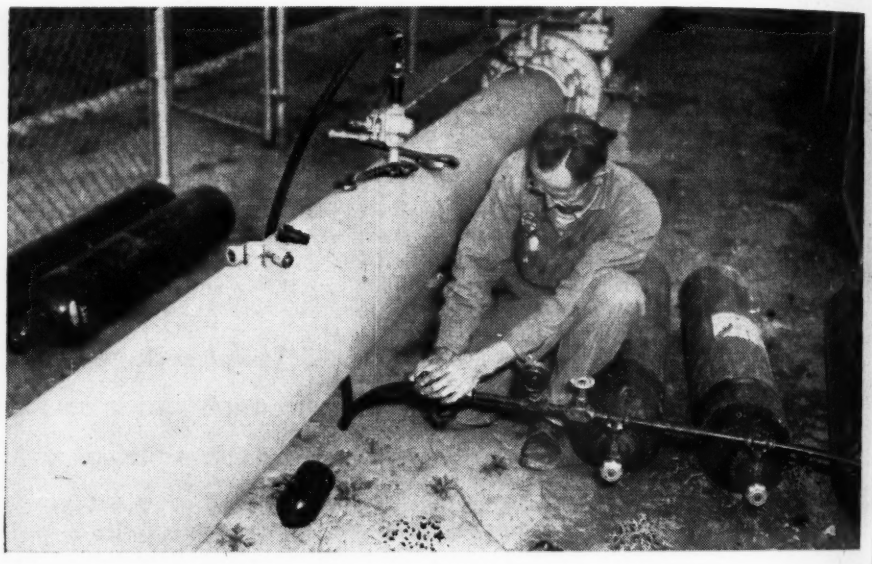
Bag was next inserted.

The bag was inflated through the tee. The bag was pushed with the padded stick into position between the nitrogen and gas blow-off stacks.



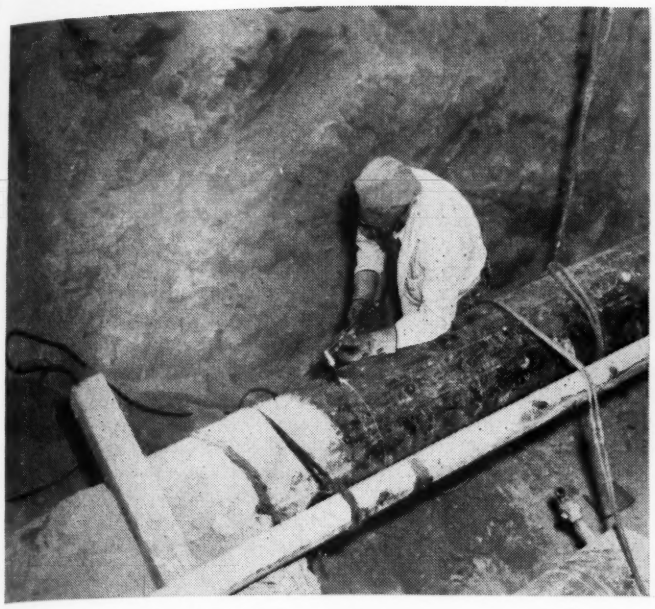
At the upstream end, a blank disc was slipped into place in the meter.

Vent was open between closed gate valve at upstream end and blank disc to vent any leakage past gate.



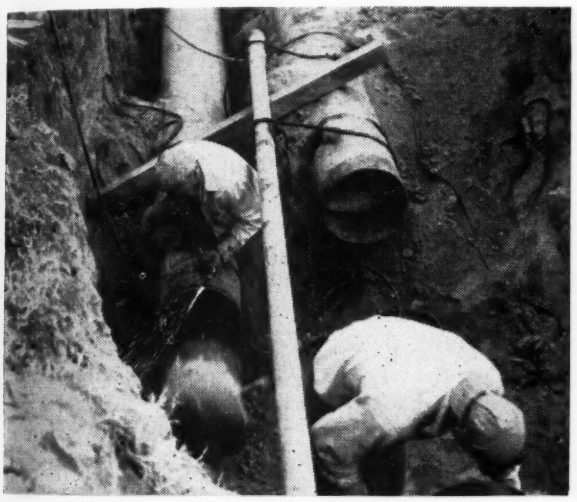
Nitrogen was inserted in section to be removed through a connection made at a point between the orifice meter and the bag.

Section of old line and new line at downstream end. (Small, 4-in. line has no connection with this operation.)



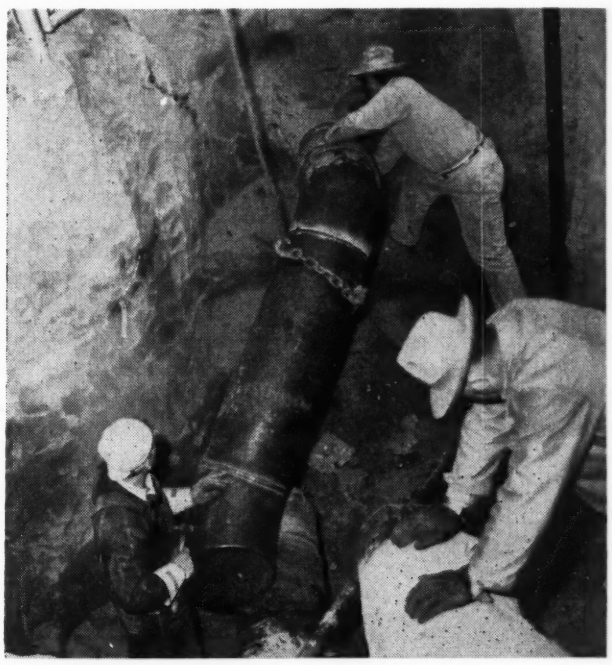
Welder cut out section of old line at downstream end following the nitrogen purge. With pipe already cut half in two, there was no flame apparent as all gas has already been purged by nitrogen.

Section of line cut out of old line preparatory to insertion of the "s" section tie-in. Section is completely clear of gas.

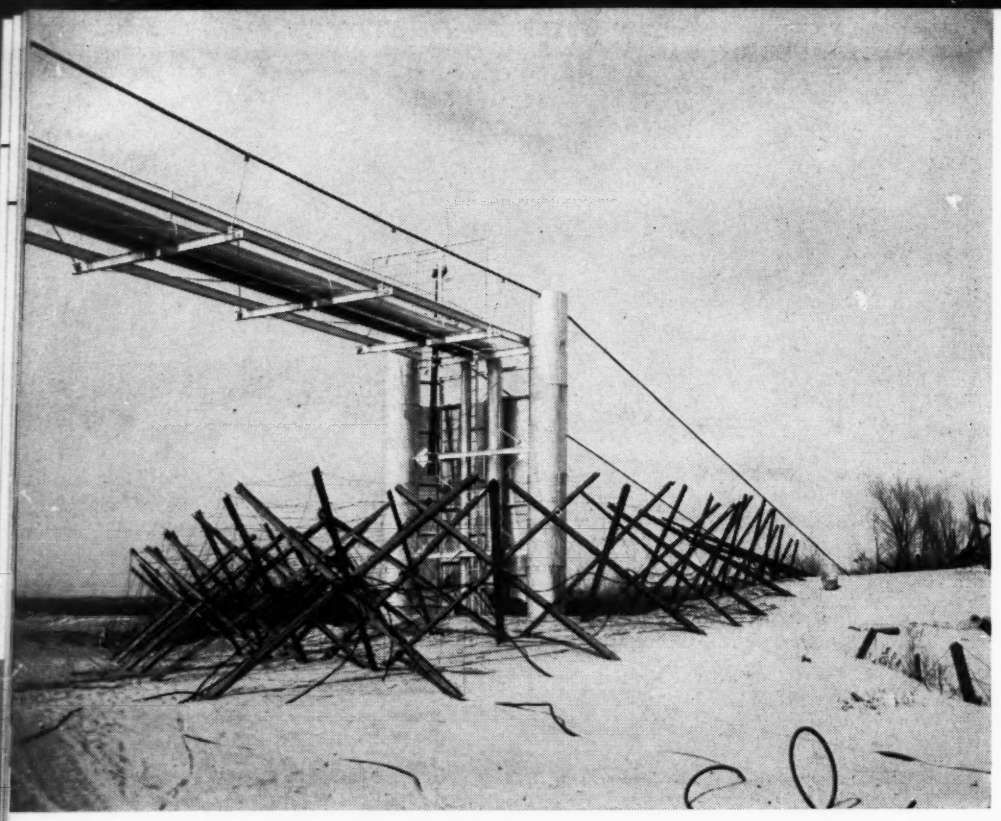


Welder next cut off test plug from new line.

Tie-in link was then set in place. Note "wedding bands."



After similar cuts had been made at upstream end, new link was set in place to connect new section. After welds were made, the newly installed section was purged with nitrogen, the blank disc removed from the orifice meter, and controlled gas used to vent out nitrogen at stack next to bag. Job was then completed by removing bag, plugging all vent connections, and opening line valves.



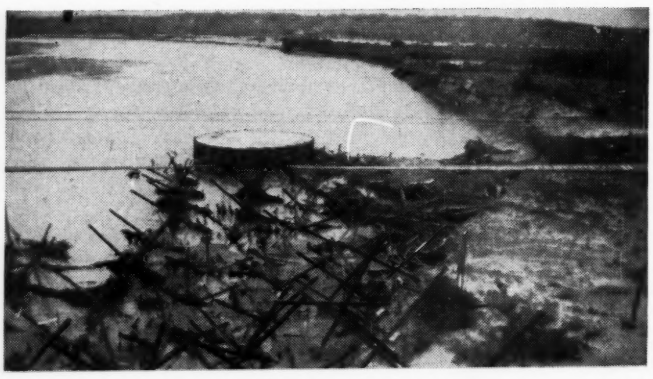
Lone Star's north pier over the Red river has been circled with 17 new jetties tied together and to the old jetties with 1-in. cable. The new 18-in. line can be seen on the bridge.

Lone Star battles Red River

THE latest salvo in a 27-year-old running battle with the fabled Red river was fired in January when Lone Star Gas Co. engineers completed the laying of 650 ft of jetties upstream from the company's Wichita Falls pipeline suspension bridge. Thus ended another chapter of the war that began when the company first built its 2256-ft span some 19 miles northeast of the Texas community and that has been raging intermittently ever since.

The capricious Red has made repeated efforts to leave its channel and wash out the two 12-in. lines that span the bridge with some success. New jetties had to be installed from time to time to hold it back. But in late 1952 a new 20-in. line was laid, joining new fields in south central Oklahoma to the Lone Star transmission net, and an 18-in. link in this system was laid down across the bridge, replacing one of the 12-in. lines. The crossing suddenly assumed new importance, and the extra protection that a new block of jetties would provide against the shifting sands of the Red was called for.

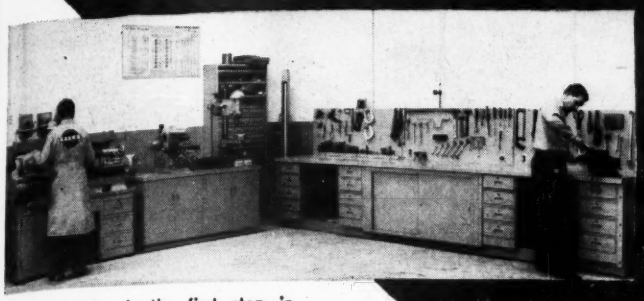
The saga began in 1926, when surveys were first made for construction of the bridge. An intensive inspection of river sands disclosed that they overlaid, to a depth of from 8 to 20 ft, a hard sand rock. So the bridge was built with three main piers averaging 30 ft above the river topped with 60-ft steel towers spaced on 30-ft centers. Sub-piers were placed on 8-ft diameter steel caissons filled with concrete and rest piers were concrete-filled 3½-ft steel cylinders tied together with 8-in. I-beams and capped with concrete cable rests. Concrete anchor blocks rest on timber piling with 2½-in. bridge cables. The floor system is steel truss supported from the main catenary.



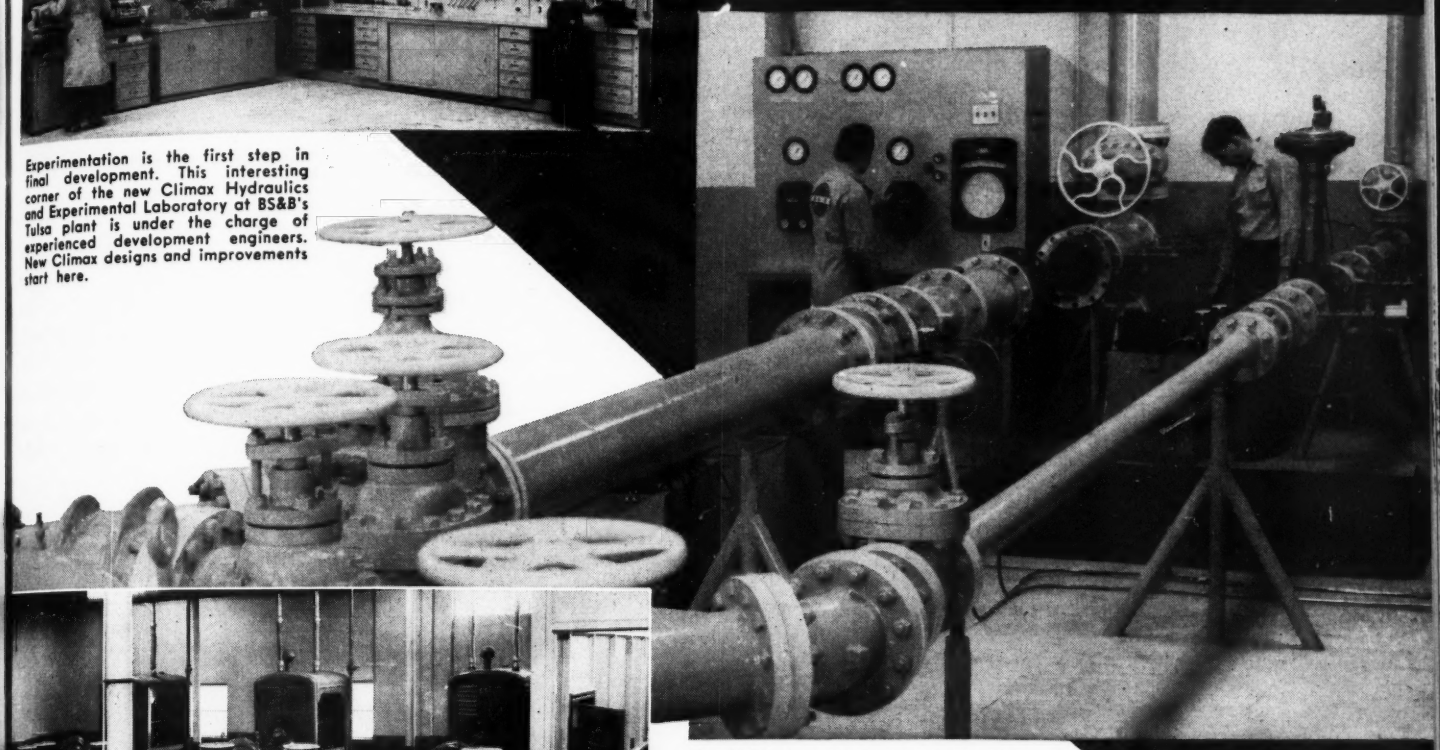
The north anchor line H showing the Red river bridge and the wooden jetties that were installed around 1928.

The same view of the North Anchor line after installation of steel jetties in 1944.

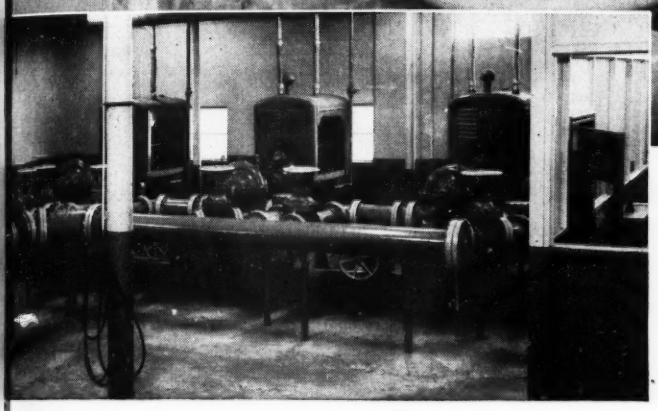
Testing the performance on which reputation has been built



Experimentation is the first step in final development. This interesting corner of the new Climax Hydraulics and Experimental Laboratory at BS&B's Tulsa plant is under the charge of experienced development engineers. New Climax designs and improvements start here.



The finished control on the "torture rack." Meter runs flow test the valves up through 10". Strain gauge equipment analyzes forces and stress under performance. Control panel in background regulates engines driving the pumps and registers flow data for calculation.



Pump manifolding for the 3 engine-driven pumps which will deliver up to 4500 gallons per minute at a 100 lb. discharge for high volume tests. Pumps can also be manifolded for series operation, in which case 300 lbs. of water at 1500 gallons per minute can be delivered.

There's no question about a Climax Control giving the satisfactory service for which it is designed. That performance is tested and proven before the control goes into the field . . . checked for minimum and maximum capacity. Flow, flow effects, valve characteristics and strain results are all evaluated by experienced engineers. Through the new BS&B Climax Control Hydraulics laboratory come a continuing series of answers to the more efficient, safe and profitable application of automatic controls. One test suggests another, one application is adapted to a similar problem. The net result: Through research, better engineering, and accurate pre-testing, comes a more efficient Climax Control.

New Climax Controls Hydraulic and Experimental Laboratory

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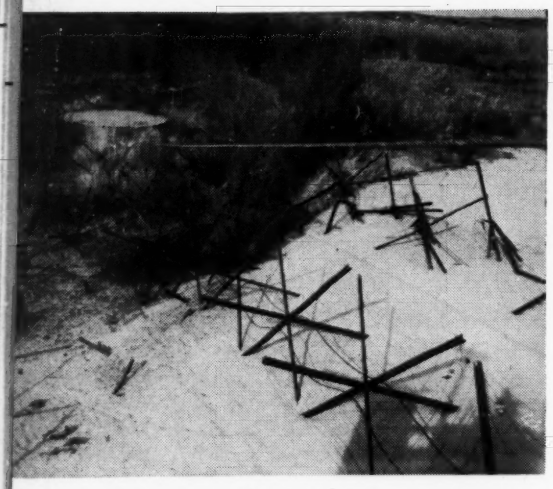
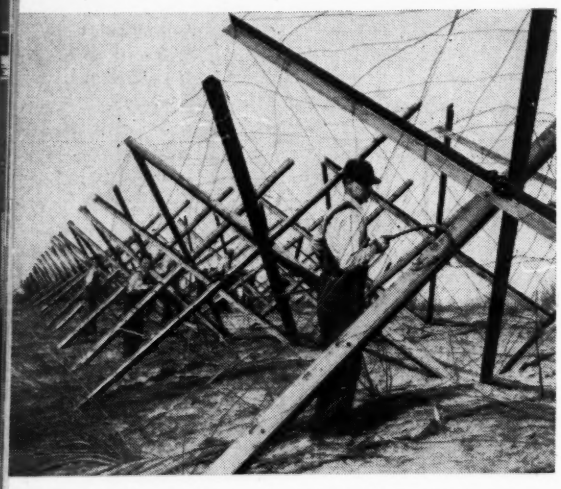


In January 1952 the north anchor of the bridge appeared to be on safe ground, surrounded by old and new jetty installations and a protective growth of cottonwood trees and brush.



Set in line, the new jetties are laced together with two lines of 1-in. cable fastened on either side of the jetty center with cable clamps.

Workmen bury deadmen in 3-ft ditches to anchor cables from back-up lines. They are made of 8-in. pipe cut in 7-ft lengths.

Originally carrying dual 12-in. lines, the bridge itself was never in danger. But the north end where the lines make a 30-ft drop to ground level has been repeatedly threatened by high water. Twice in the past, lines have been washed out at this point and the north pier and anchor block endangered.

The need for protection became evident early and a series of wooden jetties was installed upstream from the north anchor block. These built up a sand bar and engineers relaxed. They did not anticipate further trouble since the main channel was swinging back toward the middle of the river. But they didn't reckon on the future capers of the mighty Red!

Silt filled in around the wooden jetties and they began to disappear deeper into the sand. Subsequent floods washed out the top soil above them. The bank line began to cut inland again, holding around the pier but cutting in around the anchor.

In 1943, steel jetties were installed with 128 units interlocking farther upstream and starting where the old jetties had built up sand flats around the pier and anchor.

Later that same year, these units had filled with silt and were dropping deeper; but they had succeeded in pushing the bank line back some 200 ft into the river from the previous bank line and upstream so that the anchor block was at least above water.

At this time another series of 128 steel jetties was installed with three main diversion lines upstream a distance of 400 ft from the anchor. Held with four back-up retards and tied into the old jetty system, these were an improvement inasmuch as two of the diversion lines extended around the anchor block as a barrier between it and the river.

In the spring of 1947 high water again threatened the north pier and anchor. Once more the river had changed its course and was cutting in upstream above the jetty-made bank line. The existing jetties had also settled so low that they were not effective as bank protection.

This had been anticipated since the river sand is extremely porous and deep. But the units had been installed in such a way that if the river did continue to scour the bank line, sunken jetties would still prevent underscouring of anchor block and pier.

Engineers thought that new units, capping the sunken jetties, could be added until they no longer settled but remained high enough to afford satisfactory bank protection.

In January 1948 another 152 steel units were installed, three lines on the upstream side with seven back-up lines and a 200-ft double diversion line extending downstream with six back-up lines. During this installation the men had to work from rafts, dropping the jetties as they were assembled into 20 ft of water. The multiple lines were anchored into the existing work and retards were anchored to newly installed deadmen.

Meantime, each new line of jetties had reclaimed additional river bottom so that brush and small trees began to spring up north of the bridge as further protection.

Near the end of 1952, the bridge assumed increased importance in the Lone Star transmission system. The company had built a new 20-in. line into new fields in south central Oklahoma. New gas supply would flow south into Texas over the suspension bridge on which an 18-in. crossing had replaced one of the original 12-in. lines. Added protection was considered vital.

So the company decided to construct another 650 ft of jetties extending upstream at approximately a 45° angle from the anchor and spreading out in two main diversion lines to further strengthen the bank line. Materials included four carloads of 4 by 4 by ½-in. angle irons 16 ft long. These assembled into 633 units and each was laced with 340 ft of No. 6 annealed wire. The two diversion lines were spaced 50 ft apart with retards holding from four to 20 units as these lateral lines lengthen near the outer end of the main lines. One-inch cable ties the system together. The cables are fastened near the center of each jetty with cable clamps.

Seventeen repair units were cabled to the old jetties at the pier. Deadmen for the new system are 8-in. pipe cut in 7-ft lengths. Each jetty covers a 12½-ft area.

Completed Jan. 15, the new installation can be extended systematically upstream if the river should cut in again ahead of the jetties. It is also planned that planting of small cottonwood trees in a line north and upstream to connect jetties with a high bluff will form a natural barrier to further reduce high water damage.

Total cost of the new installation of jetties was around $50,000, considerably less than other types of jetties that might have been used. It is also much less than the cost of extending the pipeline bridge 3500 ft north to the high bluff mentioned above.

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- **controls corrosion**

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For further information about Trantex Tape and J-M Asbestos Pipeline Felt, write Special Industries Department, Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.

PROPERTIES OF TRANTEX TAPE

	V-10	V-20
1. Physical		
Film	Polyvinyl chloride-acetate	Polyvinyl chloride-acetate
Color	Black	Black
Thickness	.010"	.020"
Tensile Strength	30 lb/in	56 lbs/in
Elongation at Break	250%	300%
Elasticity	Excellent	Excellent
Adhesion, ozs. per inch width	30	20
Temperature Limit	200° F	200° F
Abrasion Resistance	Good	Excellent
2. Electrical		
Dielectric Strength per mil thickness, approx.	1,000 V	1,000 V
Insulation Resistance, greater than (ASTM-D-257-49)	100,000 megohms	100,000 megohms
3. Chemical		
General Resistance to—		
Sunlight	Excellent	Excellent
Acids	Excellent	Excellent
Alkalies	Excellent	Excellent
Corrosive salts	Excellent	Excellent
Water and Salt Water	Excellent	Excellent
Alcohols	Good	Good
Aromatic Hydrocarbons	Poor	Poor
Oils and Grease	Good	Good
Aging	Excellent	Excellent

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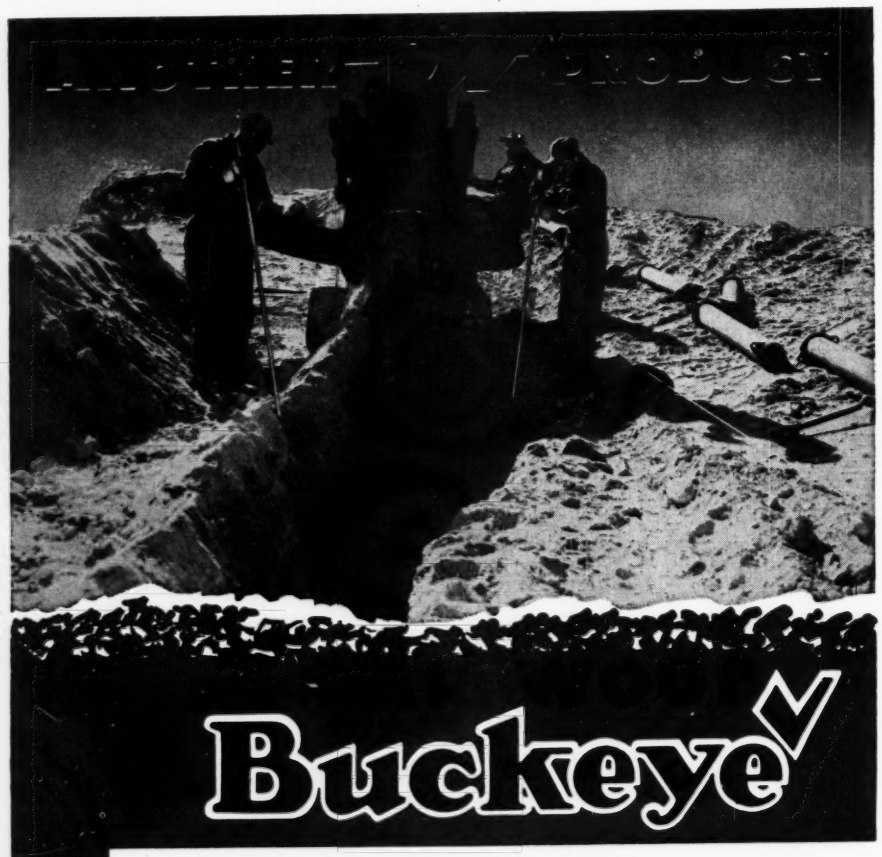

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"Hands off, Mr. Secretary"

Court voids Oscar Chapman's "common carrier" dicta

THE ambitions of ex-Secretary of the Interior Oscar Chapman to assume a sort of super-management of the operations of El Paso Natural Gas Co.'s pipelines died belatedly March 26 when the U. S. circuit court of appeals for the District of Columbia ruled out his strangulating "stipulations" for operation of the company's pipelines as common carriers.

Common carriers they will remain, under authority of the Mineral Leasing Act, but the court upheld a district court decision that found the proposed stipulations to be "beyond the secretary's authority, arbitrary, capricious, and an abuse of discretion." Thus, by agreeing to only the original stipulation—to "operate the pipeline as a common carrier in accordance with the provisions of the Mineral Leasing Act, and within 30 days after the request of the Secretary of the Interior, to file rate schedule and tariff for the transportation of gas as such common carrier with any regulatory agency having jurisdiction over such transportation, as the secretary may prescribe"—El Paso is considered to be fulfilling its common carrier obligation.

Concomitantly, El Paso need not agree to the second and third stipulations subsequently appended by the former cabinet member.

In prosecuting the appeal, the ex-secretary had held that two sections of the Mineral Leasing Act, one imposing the requirement that rights-of-way issued contain the express condition that the lines be "constructed, operated, and maintained as common carriers," the other authorizing the secretary to establish rules and regulations to accomplish the purposes of the act, gave him authority to establish such conditions as were set forth in the contested stipulations, but the court of appeals disagreed.

"As for Section 28," said the court, "in the absence of more specific language by Congress, we regard the condition that the pipelines be constructed, operated and maintained as 'common carriers' to embrace the common law meaning of the term . . . adequate enforcement of the condition is possible, under the provisio

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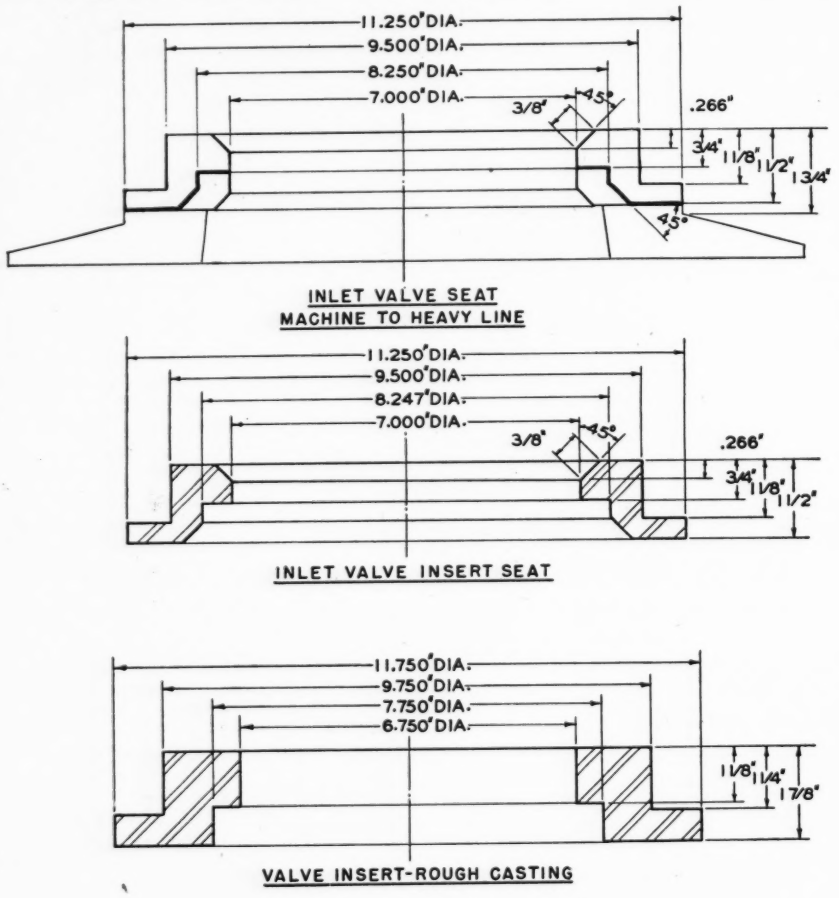


COOPER-BESSEMER TYPE NO. 22

This inlet valve insert seat for Cooper-Bessemer Types 22 and 24 engines, permitting the saving of a complete inlet valve body each time one becomes worn too thin, won an "operating kink" award of $50 for Ray Cheever, superintendent of Pan-Handle Eastern Pipe Line Co.'s Louisburg (Kan.) plant.

This is how it operates: An inlet valve body that has been refaced until there is insufficient material for further service, can be machined off (see illustration) and the insert installed with approximately the same dimensions as a new casting. At the time the insert becomes worn beyond use, a new insert can be installed without an additional casting. Inserts can be easily machined from rough castings furnished directly from a foundry, according to the inventor.

for forfeiture of the grant by the . . . court . . . for failure to comply with the provisions of the section or with appropriate regulations and conditions established by the secretary. The language of Section 28 clearly gives the secretary authority to provide regulations and conditions as to survey, location, application, and use, but we read that to pertain to the physical aspects of the rights-of-way and not to the operation of the pipeline.

". . . the statute does not purport to express adequate standards for guidance of the secretary in the complex problems attendant upon such intimate regulation of corporate affairs as the financing, construction, and employment of facilities as is attempted in the contested stipulations. . . . Congress (merely) required that a condition be incorporated in any rights-of-way granted, and provided for court decision of any question which might arise as to the adequacy of compliance."

Squeeze was on El Paso

The stipulations under fire were laid down at a time calculated to place El Paso in a tight squeeze, and the provisions were specific and broad in scope. On March 22, 1951, when all but a few miles of the line from San Juan basin, New Mexico, to California had been built, the secretary informed El Paso that issuance of remaining rights-of-way would be contingent upon the signing of a new stipulation. El Paso then filed suit for a mandatory injunction, and following negotiations a revised stipulation was proposed on May 29, 1951. This, too, El Paso rejected.

The district court ordered the right-of-way issued, ruling that the secretary had fully "exercised and exhausted his discretion" when he decided that El Paso's obligations would be fully met if it signed the original stipulation of Aug. 18, 1950—the only one to which El Paso is now held to be subject.

Sticklers

Among the many requirements contained in the second stipulation was that El Paso must "operate . . . in accordance with . . . pertinent regulations heretofore or hereafter adopted . . . and that . . . it will transport natural gas for others, whether such gas is produced from government lands or not . . ." Furthermore, rates to be charged (including those for firm service) would not exceed "component transportation cost element or charge in rates and charges for the sale of natural gas by the applicant under filed tariff involving transportation for substantially comparable service and distances via the same pipeline." And the common carrier would agree to "increase the capacity of its line sufficiently to enable it to provide for the transportation" of gas to be shipped by another party.

The secretary was also to exercise judgment as to whether a proposed rate schedule for another shipper was in line; if he thought not, the common carrier would have to submit a revised schedule.

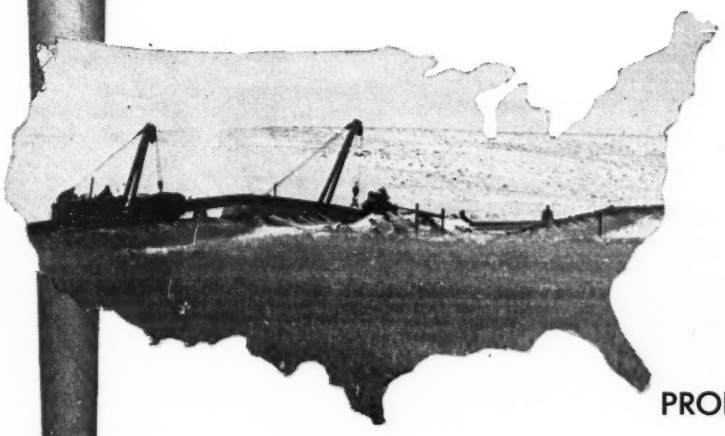
The third stipulation was not too different in implication from the second, except that it restated some of the obligations of adding capacity to handle gas for other companies. However, the court of appeals found that the latter two specifications were so detailed as to defeat the asserted purpose of the common carrier concept "because they provide for contractural arrangements between shipper and pipeline, in advance of construction, which immediately remove any new capacity from availability for common carriage."

Said, the court, in its concluding paragraphs:

"While the statute reposes discretion as to the issuance of rights-of-way in the Secretary of the Interior, that discretion by its very nature is not a continuing one. By the granting of a license to El Paso, the secretary necessarily made not an ephemeral, reversible determination, but he . . . . exhausted and terminated whatever discretion he possessed with relation to this particular controversy."

ACROSS THE NATION . . .

PIPELINES



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PIPELINE NEWS

Hearings continue in fight to serve Pacific Northwest

As the interminable hearings on the burning question of which entrant is to win the right to serve the Pacific Northwest were recessed late in April, the Canadian choice appeared to be outdistancing the field. Westcoast Transmission, the only company holding an export certificate from Canada, appeared on the basis of several factors to be lengths ahead of its competitors.

First off, Portland (Ore.) Gas & Coke Co., largest single gas utility in the market area (it would distribute an estimated 38% of all imports), broke a long official silence by coming out in favor of Westcoast. Portland had hired Bechtel Corp. to do an independent cost survey for it, and based on the construction experience of the consulting and contracting firm, Westcoast's project would have a lower initial cost, lower operating cost, greater possibility of expanding at less expenditure, an equal reliability in comparison with Pacific Northwest. The latter line is the one which Ray Fish would build to bring gas from San Juan basin, New Mexico.

Similar conclusions reportedly came out of studies made by Stanford University and the University of Western Ontario, according to President Charles Gueffroy, Portland Gas spokesman.

Secondly, one of the chief worries of Seattle Gas Co.'s N. Henry Gellert, who has been bitterly opposing the Westcoast petition, was removed when the Canadian government granted Westcoast a 22-year export permit to replace the one-year license, which would have had to be renewed each year. Mr. Gellert, a strong Pacific Northwest advocate, was still standing pat on his position that the six other "requirements for minimum protection for customers" be met before an FPC certificate is granted, however.

Pacific Northwest reportedly was having some difficulty establishing the strength of its reserves in the basin and in assuring sufficient financing for its ambitious project. There was also some question as to its ability to compete with Westcoast's rates, but a 125-mile pipeline which it now proposes to lay from San Juan to Gallup, N. M., might help solve this difficulty. By-products of the natural gas produced on Pacific's property would be marketed through such a line.

El Paso Natural Gas Co., which is intervening in Pacific's case on the basis that San Juan's reserves are needed in its present markets, is said to be planning a similar line.

This bridge was awarded honorable mention for bridges of 400 ft or more in the "aesthetic bridge competition" to select the most beautiful steel bridges in the United States. Hidden in the Louisiana bayou country, the longest pipeline suspension bridge in the world carries two 30-in. lines 4678 ft across the Atchafalaya river near Melville, La. The bridge was designed and engineered for Transcontinental Gas Pipeline Corp. by Matthews & Kenan of San Antonio, and built by the American Bridge Co. The competition for the annual award is conducted by the American Institute of Steel Contractors Inc.

Texas Illinois authorized to increase capacity

Authorization was granted Texas Illinois Natural Gas Pipeline Co., late last month to increase its system capacity by 130 MMcf per day to a total of 504 MMcf. FPC also authorized Chicago District Pipeline Co. to enlarge its system to enable it to meet increasing requirements of its customers. Both companies are subsidiaries of the Peoples Gas Light & Coke Co., Chicago.

The Texas Illinois project includes construction of six new compressor stations with a total capacity of 70,000 hp, and installation of a total of 10,000 hp additional at five existing stations. The company will also build five new lateral lines and one loop line totaling 74 miles, and a suspension-type bridge to support two 30-in. lines across the Mississippi river at a point near its existing underwater crossing at Grand Tower, Ill. Total cost of the project is estimated at $42,148,000, including $3,226,000 for the river crossing.

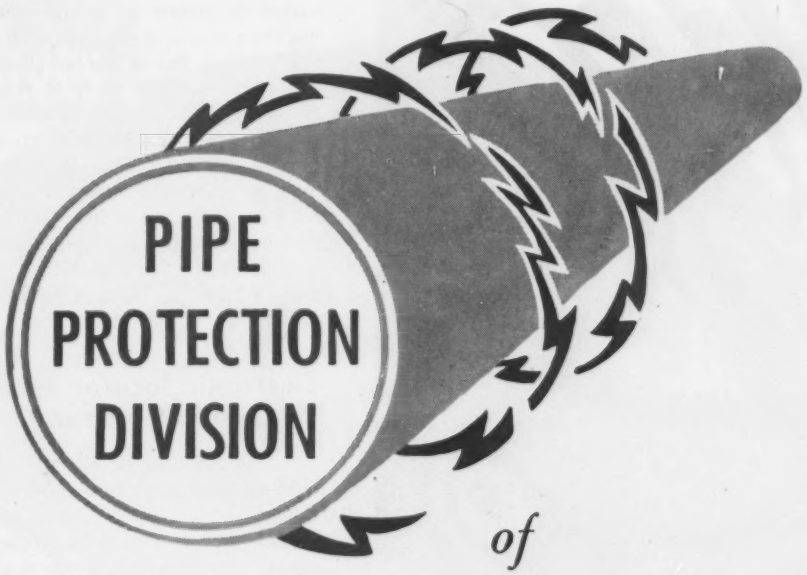
Chicago District's overall project includes about 35 miles of pipeline in the Chicago area and abandonment of about 3½ miles of existing line. It plans to construct about 18.6 miles, at a cost of $2,950,000, in 1953 and the remaining 16.3 miles, estimated to cost $2,550,000, in 1954.

An additional 100 MMcf of gas per day in 1953 and 236 MMcf in 1954 will be obtained from Texas Illinois through its new facilities and from Natural Gas Storage Co. of Illinois through its storage project now under way. The commission conditioned Chicago District's certificate to prohibit construction of the facilities proposed for 1954 until it had authorized further development of the Natural Gas Storage project. Only the initial stage has been authorized.

FPC hears plans to provide additional gas to Northern

FPC hearings were under way last month on the consolidated applications of Northern Natural Gas Co., Permian Basin Pipeline Co., Independent Natural Gas Co., all of Omaha, and El Paso (Texas) Natural Gas Co. Included in the proposal are facilities to provide additional gas to Northern.

Permian is proposing a 234-mile system to bring gas from the Permian basin and from Lea county, N. M. to a connection with El Paso at its proposed Plains station in Yoakum county. About 300 MMcf of gas daily would be delivered to El Paso, which would then deliver the gas back to Permian for delivery and sale to Northern at El Paso's Dumas compressor station in Moore county. During the first year of operation when a maximum of 200 MMcf would be exchanged between Permian and El Paso, it is believed that a southward flow of gas would continue through El Paso's 24-in. line from Dumas. El Paso expects to have sufficient gas available in the Panhandle-Hugoton area for the Permian and Northern exchange schedules.



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In other applications, Northern is seeking to build about 51 miles of pipeline in Texas, Oklahoma and Kansas, including approximately 36 miles of 30-in. mainline loops. El Paso would construct compression and dehydration facilities at its existing Dumas station to process 40 MMcf daily which Northern would receive from Phillips Petroleum Co.'s Dumas gasoline plant. Northern would take redelivery of this amount from El Paso for further transportation.

Independent is seeking to transport 10 MMcf daily from Phillips' Gray county gasoline plant to El Paso's Dumas station for processing and delivery to Northern. FPC has suspended a proposed rate increase by Independent and consolidated the application for hearing with the certificate applications.

Electronic locator used to find load of pipe in Gulf

A $16,000 load of pipe was recovered from the Gulf about three miles off shore at Corpus Christi, Texas, recently after being located by a Wilkinson line locator manufactured by Wilkinson Products Co., Pasadena, Calif. The electronic locator used by George S. Kausler Ltd., New Orleans, was employed after the shipment of pipe shifted on a barge and was lost in the Gulf.

Klauser surveyor, T. E. Orrell, explored the area with the locator mounted on the prow of a wooden skiff. The instrument registered the presence of the pipe scattered in several piles over a distance of about 250 yards.

Shutdown of Spraberry field under attack in court

Hearings were to be held April 20 on five lawsuits against the Texas Railroad Commission to halt its enforcement of the shutdown of the Spraberry oil field in west Texas. District Judge Charles O. Betts is allowing production by 40 producers, under temporary restraining orders, from oil wells not flaring casinghead gas. He refused to grant even temporary relief to those burning the gas to destroy it.

The Midland and San Angelo districts of west Texas had lost about 67,500 bbls daily oil allowable, about 63,500 bbls reduction resulting from the commission's cut in state-wide proration, and the remainder from the order to stop gas flaring in Spraberry wells. The total state-wide reduction of approximately 214,000 bbls will be a financial blow to the state, which relies heavily on income from oil taxes. It chopped more than $550,000 off state revenue from oil production taxes in April, compared with March.

Industry spokesmen opposed the shutdown, arguing it would cause the industry an economic loss of more than $11.6 million. They contend that installation of gas processing plants and transmission lines to conserve the gas is being accomplished as

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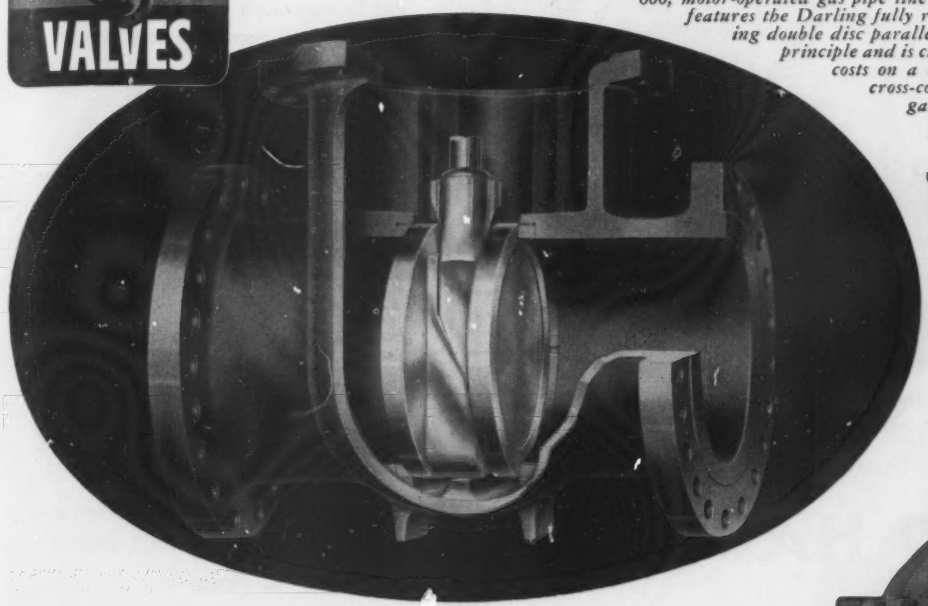
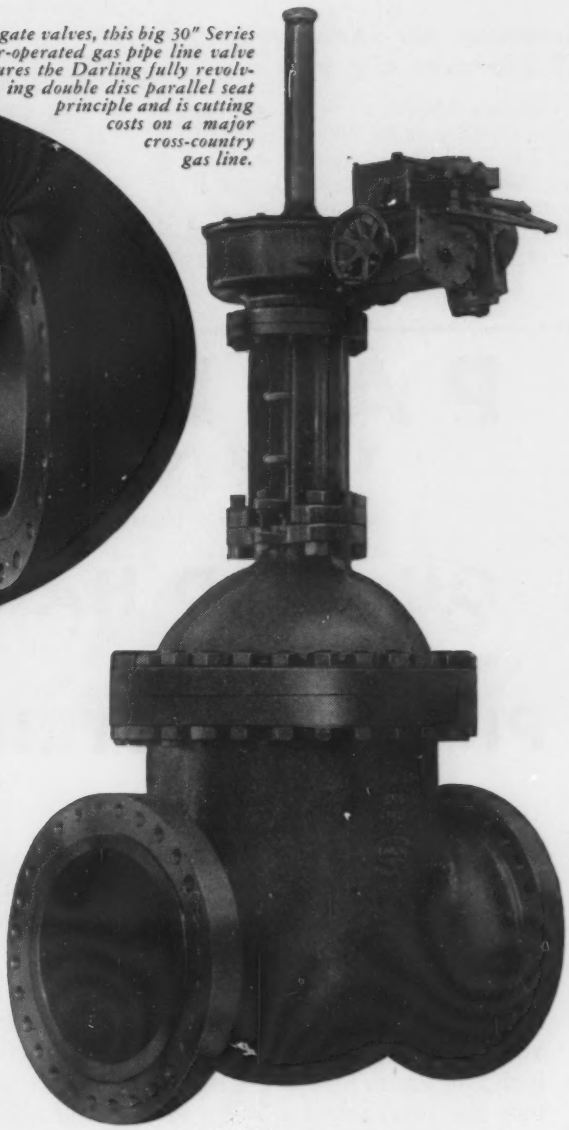


Like all Darling gate valves, this big 30" Series 600, motor-operated gas pipe line valve features the Darling fully revolving double disc parallel seat principle and is cutting costs on a major cross-country gas line.



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rapidly as money can wisely be invested.

The commission has also ordered operators in the West Sinton field, San Patricio county, to "show cause" why their oil wells should not be shut down for flaring gas.

Revenues for January up 19.2% over last year

Operating revenues of natural gas companies reporting to the FPC totaled $236,521,418 in January, an increase of 19.2% over January 1952 receipts. For the 12 months ended Jan. 31, 1953 revenues aggregated $1,984,954,689 or 18.6% higher than the $1,674,018,047 received in the 12 months ended Jan. 31, 1952.

Gas sales to ultimate consumers during the month were over 279.4 billion cu ft, an increase of 7.3% over January 1952. Sales to residential, commercial, and industrial consumers increased 0.4%, 3.6% and 14.2% respectively, while revenues from the three classes of service increased 6.7%, 9.4% and 25.2%. Revenues from all sales to ultimate consumers increased 11.8% and amounted to $113,141,785.

Net income of the companies for January 1953 was $33,795,590, up 10% from 1952. For the 12 months ended January 1953, net income of $212,546,445 represented an increase of 5.6%.

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New York PSC authorizes Niagara Mohawk project

The Public Service Commission, Albany, N. Y., has authorized Niagara Mohawk Corp. to exercice 15 gas franchises granted to it by north country towns and villages and to construct a 56-mile pipeline from a point midway between Fulton and Oswego to Watertown. The new transmission main will connect with the company's existing pipeline connecting Therm City, near Syracuse, with Oswego.

Company officials said most of the pipe needed for the new line has been delivered, and the balance is expected soon so that work may begin about mid-May. Contract for the 10-in. line has been let to Williams-Austin Co. The expected completion date is Sept. 1, after which the company will be able to make the necessary appliance conversions in Watertown and begin delivery of natural gas to about 8900 customers in and near that city before next winter.

Talkathon blocks Senate action on tidelands issue

Although approval of state ownership of the tidelands seemed certain, as *GAS* went to press the Senate was still blocked by a filibuster-like talkathon by senators opposing state ownership. Night and Saturday sessions were called in an attempt to get action on the bill late last month. A similar measure was passed by the House earlier in April, giving states clear title to offshore areas out to historical state boundaries. The Federal government is to control all continental shelf beyond the states' seaward boundaries. This stipulation is not included in the measure being considered by the Senate.

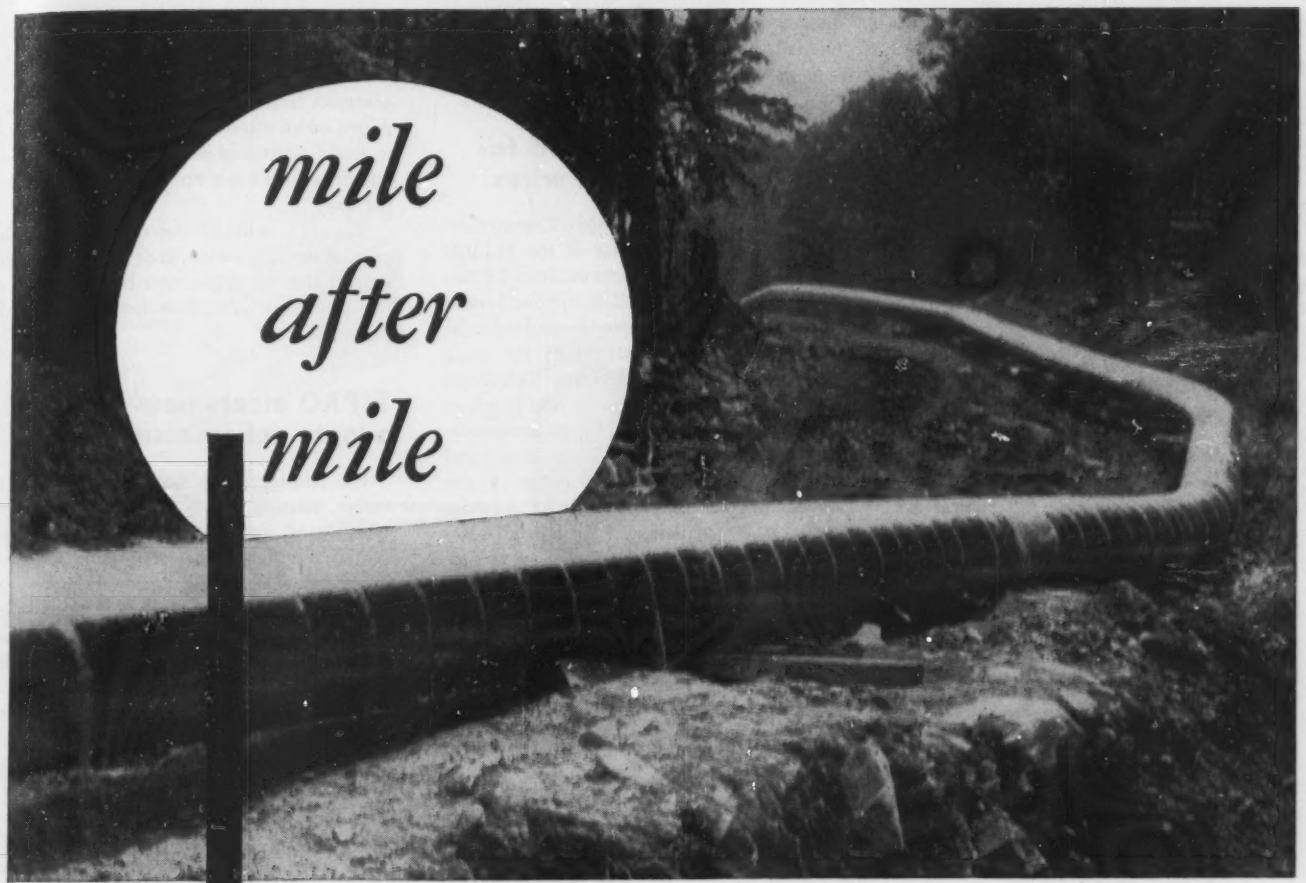
Temporary approval granted Lone Star for storage plan

The Lone Star Gas Co., Dallas, has received temporary authorization from FPC to construct pipeline facilities for natural gas storage in the New York City field, Clay county, Texas. The project, estimated to cost $1,144,617, will include a 2640-hp compressor station and about 5 miles of 12-in. line.

The company said it has gas available from Oklahoma fields which cannot be utilized during the summer months. This would be stored for use in winter to meet peak-day demands. Maximum input to the storage reservoir will be approximately 20 MMcf per day, and the company will be able to withdraw up to 80 MMcf daily.

Tennessee Gas buys stock to pave way for merger

The Tennessee Gas Transmission Co., Houston, has announced it is taking steps to purchase 25% interest in the American Republics Corp. at an estimated cost of $25



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million. The move is described as a step in paving the way for the eventual merger of American Republics with Tennessee Production Co., a Tennessee Gas affiliate.

Barber Oil Corp., at present a major stockholder in American Republics, has agreed that the two companies should be merged and, "If mutually acceptable terms are developed, Tennessee Gas and Barber Oil will vote their shares of American Republics and Tennessee Production in favor of the merger," according to Gardiner Symonds, president of Tennessee Gas.

New Victory gas storage field to be activated

The Victory and Proctor gas fields, which have helped supply West Virginia, Ohio, and western Pennsylvania with natural gas for over 25 years, will begin storing gas piped in from the southwest this year to meet next winter's heating demands. The latest development in the merger of the two former gas-producing areas into the new Victory underground storage field is the announcement of plans for a $500,000 compressor station which Manufacturers Light & Heat Co., Pittsburgh, will begin constructing this spring.

Activation of the storage area will probably come before completion of the station. Line pressure will be used to force gas into the wells until the new station is completed. The compressor station will be located at Adaline, W. Va. and will have 1760-hp capacity.

FCC approval granted for purchase of private wires

The Federal Communications Commission has approved the purchase of the Phillips Petroleum Co.'s private wire facilities by two operating units of the Bell Telephone System and the General Telephone Co. of the Southwest, it has been announced by the Long Lines department of the American Telephone & Telegraph Co. The approval was based on an application filed jointly by the Southwestern Bell Telephone Co., Long Lines, and General Telephone. Under terms of the agreement the companies would purchase about 10,000 miles of circuits and 1300 miles of pole line, which they plan to supplement with their own lines to provide Phillips with a more extensive network of telephone and teletypewriter services.

FPC to hear Northern's plan to serve fertilizer plant

FPC hearings were scheduled to begin April 1 on Northern Natural Gas Co.'s proposal to supply natural gas to the Nitrogen division of the Allied Chemical & Dye Corp. for use in a plant to be built near La Platte, Neb. for production of fertilizer products.

The two-part application proposes, first, to construct facilities to sell and deliver gas to Allied on an interruptible basis; and second, to build additional facilities to deliver and sell on a firm basis up to 12 MMcf of gas per day.

The FPC will be concerned with both parts of the application. It denied Northern's request that its application be heard under the shortened procedure for noncontested proceedings.

TIPRO elects new officers; adopts policy resolutions

An address by a natural gas industry leader, election of officers and adoption of reports and resolutions of association committees highlighted the seventh annual meeting of the Texas Independent Producers & Royalty Owners Assn. in San Antonio late in March. M. D. Bryant of San Angelo was elected president; new secretary is Bert Fields of Dallas. Retiring President Bryan W. Payne of Tyler became vice chairman of the executive committee; and William T. Beard Jr. of San Antonio, treasurer, and E. I. Thompson of Austin, executive vice president, were re-elected.

In his address before the meeting, C. P. Rather, president of the Independent Natural

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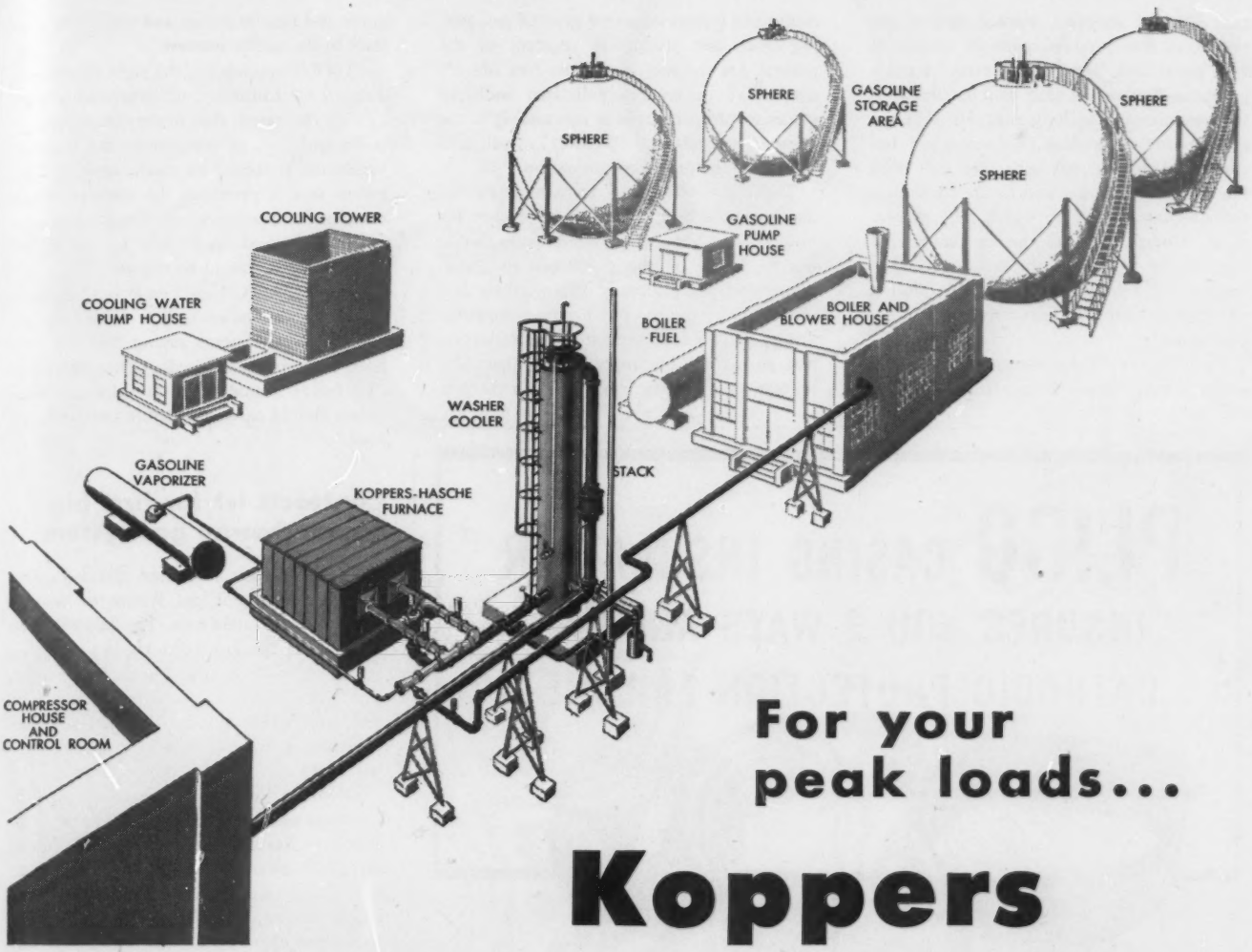

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Gas Assn. of America, warned natural gas producers that establishment of minimum field prices and "state export taxes" on this premium fuel would react as a detriment to the producer in the long run. He said, incentives for expanding production are imperative if the industry is to keep pace with the expanding market and insure consumers the adequate service to which they are entitled. Competitive bidding for natural gas supplies, he declared, is the surest method of raising the field price of gas and offering adequate incentive for development and exploration.

In its report divided into three categories —gas prices, taxes, and regulation—the gas committee advocated a free price of gas, stating that "the production segment of the natural gas industry should be free of . . . unrealistic monopoly-dictated wellhead prices (which) contribute measurably to the waste of natural gas." "TIPRO . . . will continue to fight price discrimination."

The report declared "the natural gas industry should bear its fair share of state tax obligations," but any increase in taxes should not be borne by the producers and landowners who are already paying their full share, but by the gas purchasing companies.

Opposing federal regulation of production and gathering, the report states that FPC regulation is "contrary to interest of the producer and royalty owner and ultimately contrary to the public interest."

"TIPRO opposes . . . the right of eminent domain for unlimited underground storage . . . To the extent that underground storage is limited . . . to compensate for seasonal variations, it should be encouraged. To the extent that it promotes the transfer of gas reserves from areas where the price is artificially depressed, to be sold . . . at higher prices later, it should be opposed."

The "TIPRO Oil and Gas Policy" set forth by the resolutions committee echoed the gas committee sentiments saying that the "tax base must be broadened. Other industries . . . (and) segments of the oil and gas industry should participate more heavily in the load."

Contracts let for first big Saskatchewan gas system

Three contracts have been awarded covering the first major gas system to be constructed in Saskatchewan. The Saskatchewan Power Corp. project will include a gathering system in Brock-Kindersley gas field, a pipeline from Brock to the city of Saskatoon and distribution systems in Saskatoon, Delisle, and Rosetown. It is estimated the cost will be in excess of $6 million.

Dividing the program into three parts the contracts were awarded as follows: First, the Brock to Saskatoon pipeline to cost about $475,000, awarded to the Banister Construction Co. of Kindersley and Edmonton, Alberta; second, the distribution system in Sackatoon expected to cost about $1.1 million, awarded to Williams Brothers Ltd. of Edmonton; and third, the Brock gathering system and distribution systems in Rosetown and Delisle to cost about $91,000, awarded to Preston Clarke Ltd. of Moose Jaw and Edmonton.

United Fuel storage pool facilities authorized

The United Fuel Gas Co., Charleston, W. Va., has received Federal Power Commission authority to construct pipeline facilities for the activation and operation of a new storage pool near Ripley in Jackson county, W. Va. Estimated cost of the transmission facilities is $2,531,040 and activation of the storage pool is expected to cost $1,885,800.

United will construct about 32.5 miles of 24-in. pipeline between its Lanham compressor station in Putnam county and the storage pool, which is expected to have a maximum storage capacity of 20 billion cu ft. About 8 billion cu ft will be cushion gas and 12 billion will be the maximum annual circulating volume. The company estimates that maximum daily deliverability from the pool will be about 180 MMcf.

About 2269 MMcf of gas will be injected into the pool from July through October 1953, but no deliveries will be made until the 1955-56 winter season.

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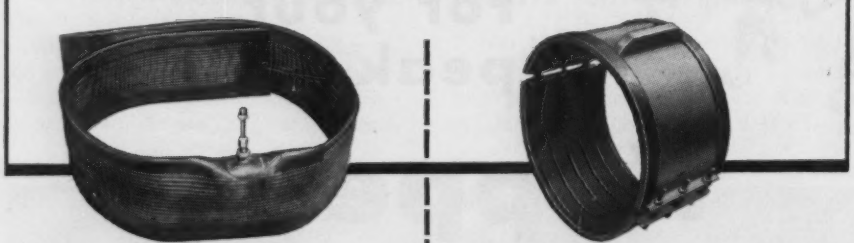

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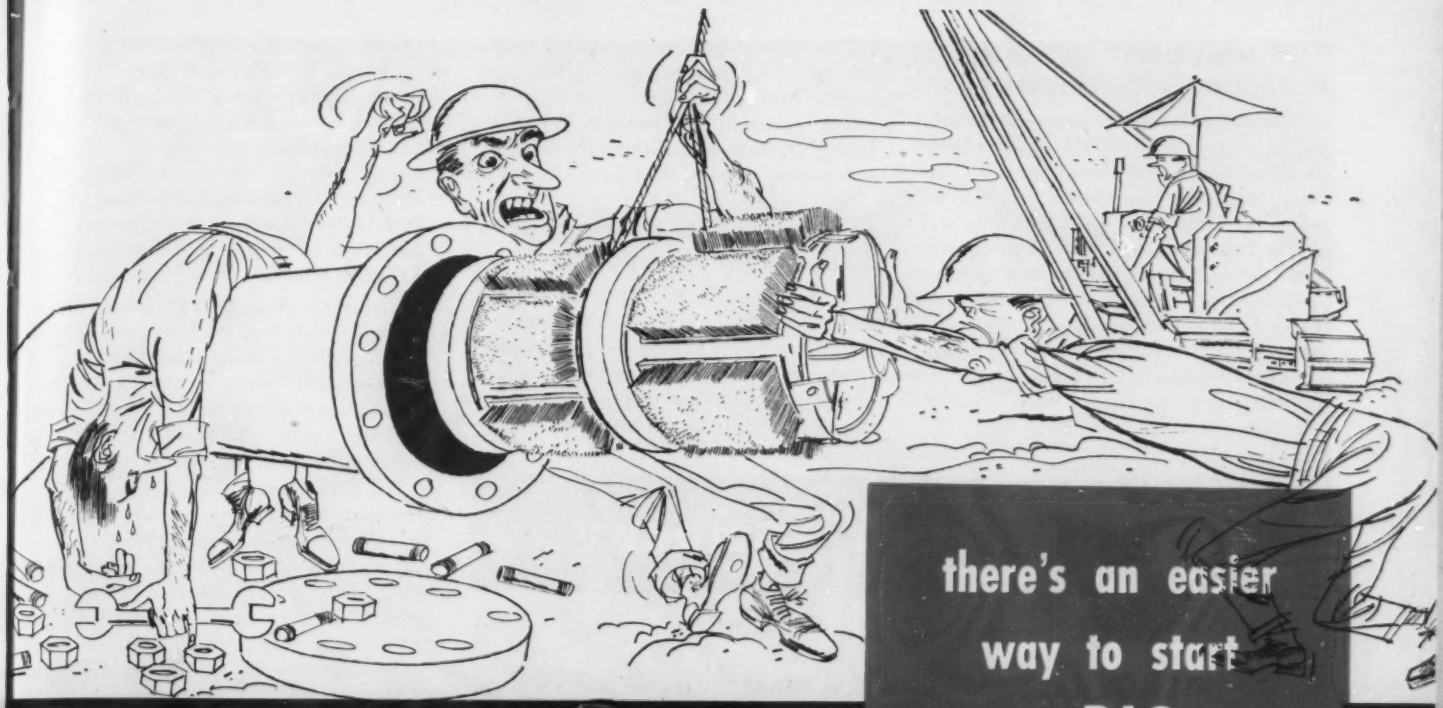

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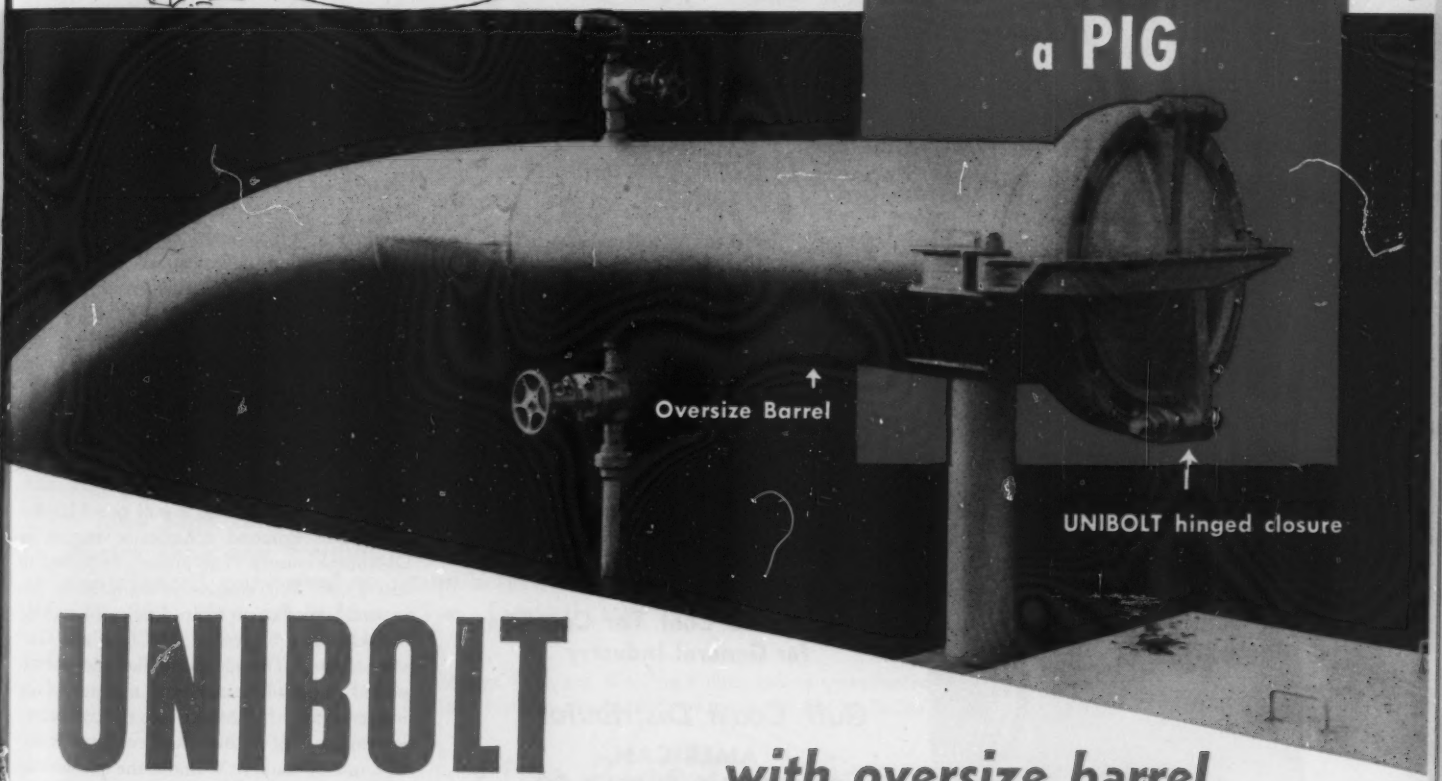

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TGT wins point on supply testimony in Northeast case

Hearings continued to drag out last month on the competitive proposals for gas service to New England. Evidence submitted by Northeastern Gas Transmission Co. and Tennessee Gas Transmission Co. regarding gas supplies was admitted as part of the record at the hearings. It intended to show that gas supplies now estimated to be available to Texas Eastern Transmission Corp. are not sufficient for the company to render proposed service to Algonquin Gas Transmission Co. and the service authorized to other customer companies.

The evidence had been submitted earlier but Presiding Examiner Edward B. Marsh ruled it was not relevant to the issue and refused to permit it to be made part of the record. Northeastern, Tennessee and FPC staff counsel appealed the ruling.

FPC schedules hearings on $28 million rate boosts

On the rate scene with FPC, recent action includes scheduling of hearings for three rate increase proposals, making one increase effective under bond, suspending one and part of another, and the filing of one new application. The total increase in rates involved an annual amount of $28,306,000.

Hearings on Michigan-Wisconsin Pipeline Co.'s suspended increase of $7,643,000 were to have begun April 20; hearing on Alabama-Tennessee Natural Gas Co. is scheduled for May 25; Transcontinental Gas Pipe Line Corp.'s proposal was to be heard May 4. Both rate increases have been effective under bond since last fall. Proposed increases total $313,000 and $9,819,000, respectively.

The $388,000 increase proposed by Tennessee Natural Gas Lines Inc. was allowed to go into effect under bond March 27. It had been under suspension since last October. Application was filed April 6 by Hope Natural Gas Co. for a proposed $3,830,000 increase to be effective May 1.

Southern Natural Gas Co.'s proposed increase of $6,313,000 was partially suspended, but FPC ruled that about $3,145,000 of the increase, relating to the sale of gas for resale to industrial consumers only, is not subject to suspension by the commission under the Natural Gas Act. Chairman Buchanan and Commissioner Dale E. Doty dissented in part, and said in a joint statement they would suspend the proposed changes in their entirety, because an examination of the rate schedule showed no separate rate, "no self-contained provisions," for application to "the sale of natural gas for resale for industrial use only." They added that "industrial consumers," by Southern's own definition in its rate schedule, include commercial consumers. "And, clearly, Southern Natural cannot, by thus redefining 'industrial' use, exempt from the commission's suspension power, sales for resale not exempted by the act."

Cities Service asks okay to build 69 miles of line

The Cities Service Gas Co., Oklahoma City, has applied for authority to construct 69 miles of line and to install one 1100-hp unit at its Edmond compressor station in Oklahoma county. The project, estimated to cost $3,002,700, consists of 44 miles of 20-in. and 25 miles of 16-in. line to be located in Oklahoma, Cleveland, McClain, and Garvin counties. The additional facilities are expected to provide capacity to maintain daily inputs of over 187 MMcf into the company's system south of its Blackwell compressor station in Kay county. Without the new source, the company said, a decline to about 87.5 MMcf is expected during the period through 1956 from its system south of the Blackwell station.

Gas hydrate control meeting features operating problems

The 1953 Gas Hydrate Control Conference to be held in the Engineering Auditorium at the University of Oklahoma, Norman, May 5-6, will feature five papers to be presented by outstanding men of the industry and a round-table discussion of operating problems.

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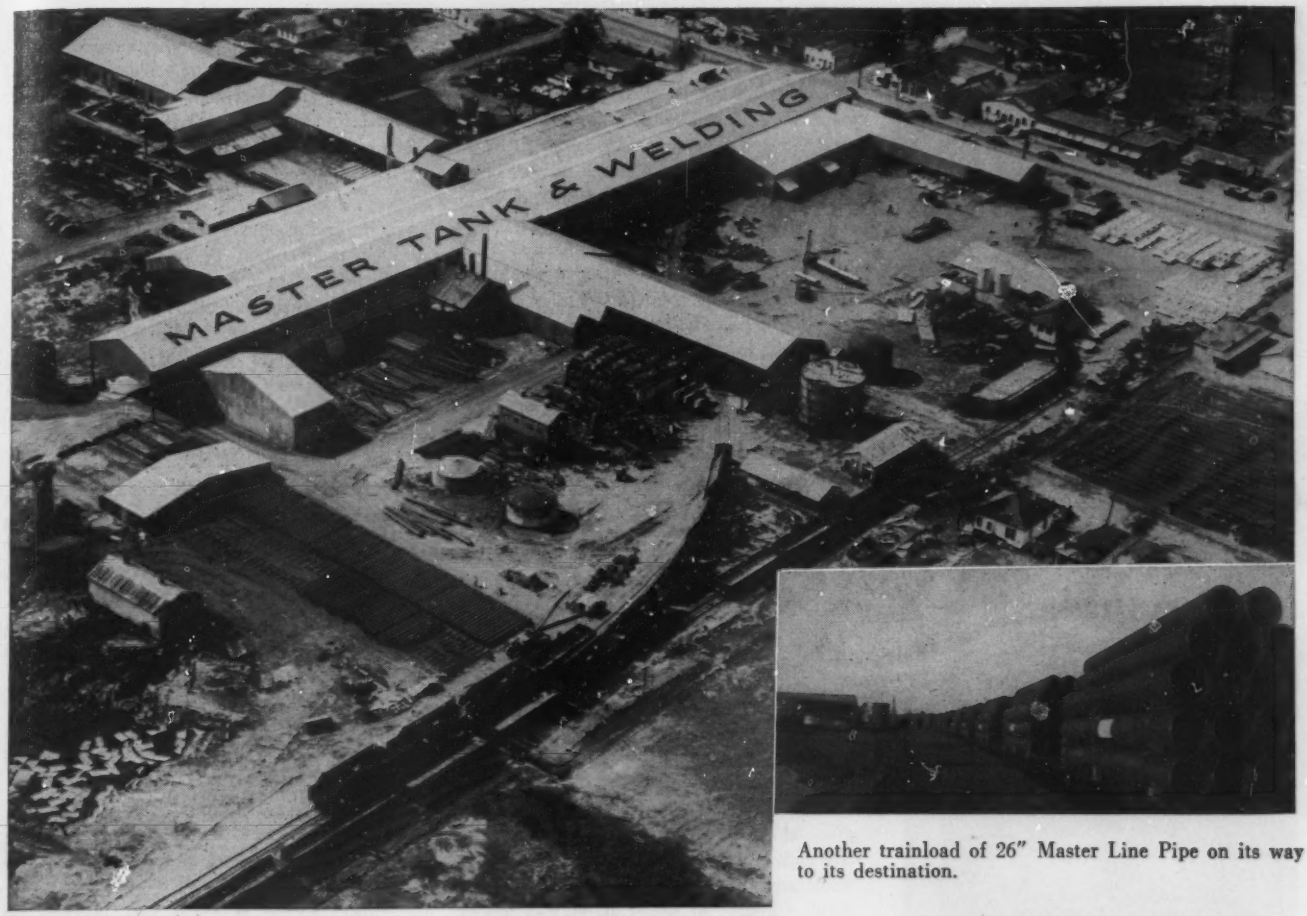

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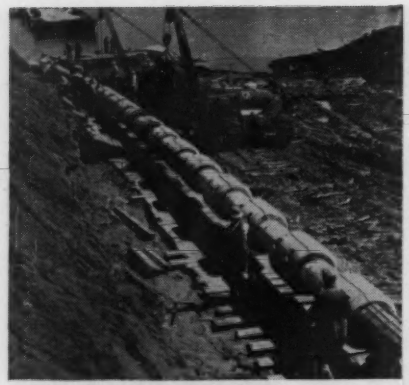

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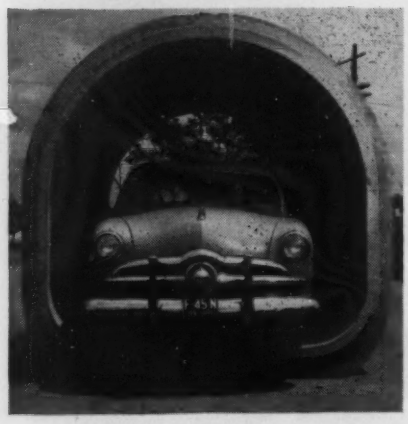

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W. M. Deaton of the helium division of the U. S. Bureau of Mines will speak on "An Instrument for the Measurement of Water Vapor in Natural Gases." Another paper, "A New Desiccant for Drying Natural Gas," has been jointly compiled by R. J. Getty, Aluminum Research Laboratories; C. E. Lamb, Continental Oil Co., and W. C. Montgomery, Aluminum Co. of America.

R. H. Jacoby of Stanolind Oil & Gas Co. will present the paper, "Vapor-Liquid Equilibrium Data for the Use of Methanol in Preventing Gas Hydrates." "Hydrate Formation in a Two-Phase Hydrocarbon System" is the title of the paper by Frank R. Scauzillo, Ovid Baker, and Will Swerdloff of Magnolia Petroleum Co.

F. M. Townsend of the School of Chemical Engineering, University of Oklahoma, will speak on "Vapor-Liquid Equilibrium Data for Diethylene- and Triethylene Glycol-Water-Natural Gas Systems."

Notes

Texas Eastern Transmission Corp., Shreveport, was given temporary authority to sell to presently connected customers the natural gas originally allocated for Algonquin Gas Transmission Co., Boston. Similar authorization had been granted for the period from December through March; the present authorization extends through August. Algonquin is unable to accept delivery of gas because of a court decision voiding the FPC certificate issued to it.

The FPC has denied a motion by Gulf Interstate Gas Co., Houston, to omit the intermediate decision procedure in the proceeding involving the company's application to build an 860-mile natural gas pipeline from southern Louisiana to a point in northeastern Kentucky. The request was made March 11 at the conclusion of hearings on the application. The action would have meant the case would be decided directly by the commission, without the presiding examiner filing an intermediate decision.

A construction program including a field compressor station, a gasoline plant and 73 miles of gathering and transmission pipelines has been announced by Lone Star Gas Co., Dallas. The project, estimated to cost $3,269,000, will increase delivery capacity from Wise and Jack counties, Texas, by 50 MMcf per day. Construction on the new lines, to strengthen the gas supply for the fast-growing Fort Worth-Dallas area, is scheduled to begin in June. The gasoline plant is already being built near Springtown in Parker county.

Permission has been granted Manufacturers Light & Heat Co. by FPC to acquire the natural gas facilities of Cumberland & Allegheny Gas Co., both subsidiaries of the Columbia Gas System Inc., Pittsburgh group. The Cumberland facilities include about 269 miles of transmission lines in West Virginia, about 87 miles in Maryland, and three compressor stations totaling 2150 hp in West Virginia and Maryland. No changes will be made in the service rendered by the system to either retail domestic customers or industrial consumers.

A "real discovery" is the way J. T. Whitlock, independent Texas gas and oil operator, described a shallow gas well in northeast Mississippi recently. The surprise well, in Itawamba county, indicates "that we have hit a great new gas field," Mr. Whitlock said. The well was drilled to 1168 ft in a hole started and abandoned in 1921 during a similar exploration.

The Equitable Gas Co., Pittsburgh, has filed an application for authority to construct a 1320-hp compressor station in Wetzel county, W. Va., 9 miles of 12-in. line from the compressor station to the proposed Logansport storage field in the Big Injun Sand, Marion county, W. Va., and various 6- and 8-in. well connecting lines. Activation of the Logansport pool, which is expected to provide additional storage capacity of about 3023 MMcf of gas, will cost an estimated $2,217,400.

A decision authorizing Texas Gas Transmission Corp., Owensboro, to construct a meter station for sale of natural gas to Mississippi Power & Light Co., Jackson, has been filed by FPC Examiner Francis L. Hall. The decision limits operation of the facilities to a 10-year period and sets maximum deliveries at 30 MMcf per day and not more than 6959 MMcf annually. The gas is to be used for boiler fuel at Mississippi Power's Delta electric generating station now under construction near Cleveland, Miss.

An oil and gas conservation bill was passed by the Oregon Senate early last month and sent to the House. Senator Philip S. Hitchcock of Klamath Falls, chairman of the natural resources committee, said the state would be ahead if it should already have such legislation on its books whenever oil is found in Oregon. The measure is a combination of the North Dakota oil law and the Interstate Oil Compact Commission bill. Administration of the act would be under the State Department of Geology and Mineral Industries.

A $200 annual scholarship for one girl each year in graduate work in petroleum industry subjects at Southern Methodist University, Dallas, has been announced as a new project of the Dallas Desk & Derrick Club. The scholarship will be based on two semesters study per year and will be administered through cooperation of the SMU scholarship board and a permanent scholarship committee set up by the club. The plan includes first preference on the following year's scholarship for the student wishing to continue her graduate work a second year.

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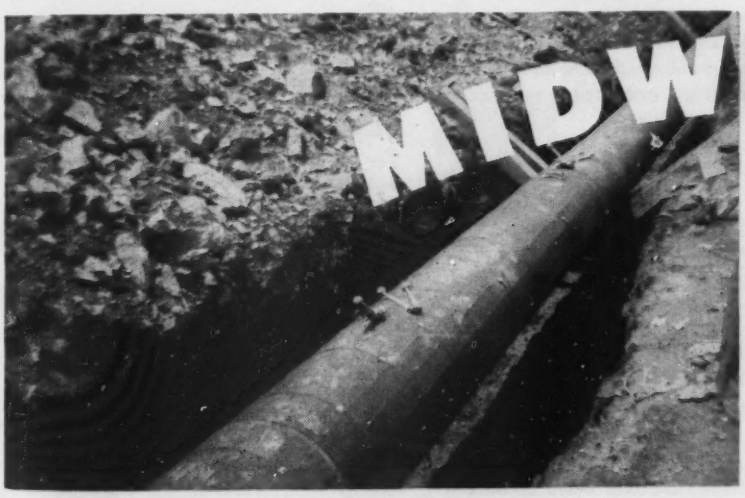

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This temporary river crossing of its main gas line from Goleta, Calif., dry gas field to the Southern Counties Gas Co.'s northern division is now high above the Santa Ynez river. The 4-in. line is supported by 1-in. steel cables for a span of 664 ft. The original 8-in. line, which was washed out with the state highway bridge last year, will be replaced by a 10-in. line when the new bridge is completed this summer.

Plans have been outlined by Fort Worth Basin Gas Co., subsidiary of Smith Contracting Co., for construction of a natural gas line which would tap oil fields in seven west central Texas counties. The proposed line would carry gas into the Dallas-Fort Worth area for industrial consumption. The company said it was interested in purchasing 500 MMcf of gas daily.

One of the largest river weight orders on record was completed recently by Universal Concrete Pipe Co. at its Kenvil, N. J. plant. The order was for more than 3000 sets of reinforced concrete river weights for Ford, Bacon & Davis Inc., agents for Algonquin Gas Transmission Co. Varying in size from 27-in. to 95⁄8-in. inside diameter, the weights were used to submerge natural gas line between Bernardsville, N. J. and Danbury, Conn.

The Montana State Land Board announced last month that more than half the applications to lease 82,097 acres of oil and gas land from the state have been cancelled. No explanation was offered, but the action followed a decision by the board to abide by a recent ruling which held a newly adopted oil and gas lease law to be unconstitutional. It would permit leases to run as long as production was continued. The former law provided a 20-year maximum on leases.

Work has started on the final link of a $1,465,000 high-pressure pipeline to carry gas to and from Ohio Fuel Gas Co.'s underground storage areas in Richland, Wayne, and Holmes counties. This section of 20-in. line will extend about 9 miles from the company's Treat compressor station in northern Licking county to a point near Mt. Vernon.

Progress Reports

PLANNED

ATLANTIC SEABOARD CORP. and **VIRGINIA GAS TRANSMISSION CORP.,** Charleston, W. Va. Docket G-2062 for 5000-hp compressor station in Braxton county, W. Va.; 6600-hp station in Upshur county, W. Va.; and 5000-hp station in Shenandoah county, Va.; supercharging 3 units from 880 hp to 1100 hp and installation of one 1100-hp unit at existing station in Hardy county, W. Va.

CAROLINA NATURAL GAS CORP., Charlotte, N. C. Docket G-1956 for 40 miles of line to connect with Transco line near Kings Mountain, N. C., extending to Rock Hill, S. C., with laterals to four South Carolina points.

CENTRAL WEST UTILITY CO., Kansas City. Docket G-1682, four alternate plans to serve Clay county, Mo.

CHATTAHOOCHEE NATURAL GAS CO., Birmingham. Docket G-2066 for 70 miles of line in northwest Georgia, to connect with system of Southern Natural in Floyd county.

COLORADO INTERSTATE GAS CO., Colorado Springs. Dockets G-2120 and G-2121 for 365-mile, 22-in. line from Denver to connection with proposed Pacific Northwest Pipeline Corp. line at Green River, Wyo., with 5500-hp compressor station at Green River; and 49 miles of 20-in. line parallel to existing 20-in. line to Denver; 30 miles of 12-in. line to connect 20-in. line in Colorado with Morton county, Kan. compressor station; and 24,860 hp in compressor capacity at new and existing stations in Colorado, Oklahoma, Texas and Kansas.

CONNECTICUT GAS CO., Berlin. Docket G-1954 for 3 short pipelines, totaling about 2 miles, to extend from Connecticut Light & Power gas

plants to Algonquin Gas Transmission Co. from plants at Waterbury, Willimantic and Putnam, Conn.

CUMBERLAND & ALLEGHENY GAS CO., Pittsburgh. Docket G-2059 for 17 miles of line in Garrett and Allegany counties, Md. and Mineral county, W. Va. and retirement of 75 hp in compressor units at station in Preston county, W. Va.

EAST OHIO GAS CO., Cleveland. A 125-mile, 26-in. pipeline to serve Cleveland area from point just south of Toledo.

EL PASO NATURAL GAS CO. Docket G-2106 for total of 1778 miles of line to include about 750 miles of 30-in. and 70 miles of 24-in. mainline with related gathering lines, purification facilities and compressor plants totaling 157,000 hp to carry gas from Permian and San Juan basins.

EQUITABLE GAS CO., Pittsburgh. Docket G-2130 to activate the Logansport storage field in the Big Injun Sand, Marion county, W. Va., install a 1320-hp compressor station in Wetzel county, about 9 miles of 12-in. line from storage pool to compressor station, and various 6-in. and 8-in. well connecting lines.

FREDERICKSBURG NATURAL GAS CO., Fredericksburg, Va. Docket G-2041 for 28½ miles of 4¼-in. line and .72 mile of 3½-in. line connecting with Transco line, extending to Fredericksburg and area.

GLACIER GAS CO., Butte, Mont. Dockets G-1816, G-1817, G-1818 for 285 miles of 20-in. line from northeast of Kalispell, Mont. to Spokane, Wash.; 91 miles of 8⅝-in. from Spokane to Lewiston, Idaho; 120 miles of 16-in. from Spokane to Hanford, Wash.; 130 miles of 12¾-in. from Spokane to south of Trail, B. C.

GULF INTERSTATE GAS CO., Houston. Docket G-2058 to construct 860 miles of 30-in. line from Point Rayne, La. to Boyd county, Ky., 229 miles lateral lines and five 8000-hp compressor stations in four states.

KANSAS-NEBRASKA NATURAL GAS CO., Hastings, Neb. A 15-mile line from Big Springs to Brule, Neb. Construction to begin about June.

MISSOURI CENTRAL NATURAL GAS CO., Macon, Mo. Docket G-1509 for 25 miles of 6-in. from Moberly to Macon, Mo.

MISSOURI PUBLIC SERVICE CO., Warrensburg.

The pipeline research committee of AGA met recently in Chicago to select and initiate 12 projects covering natural gas problems ranging from production to delivery. Members present were, standing (l. to r.): Stephen A. Bergman, Panhandle Eastern Pipe Line Co.; D. R. Pflug, United Gas Corp.; C. D. Alstadt, Columbia Gas System Service Corp.; G. B. Lowther, Mississippi River Fuel Corp.; R. T. Wells, Cities Service Gas Co.; Preston Parks, Colorado Interstate Gas Co.; J. F. Eichelmann, El Paso Natural Gas Co.; O. W. Clark, Southern Natural Gas Co.; W. T. Bulla, Natural Gas Pipeline Co. of America; T. L. Robey, AGA. Seated: B. D. Goodrich, Texas Eastern Transmission Corp.; J. L. Thompson, Michigan-Wisconsin Pipe Line Co.; C. F. de Mey, Columbia Gas System Service Corp.; H. L. Stowers, Texas Gas Transmission Corp.; J. T. Innis, Northern Natural Gas Co. (chairman); John H. Carson, Consolidated Natural Gas Co.; E. F. Schmidt, Lone Star Gas Co.

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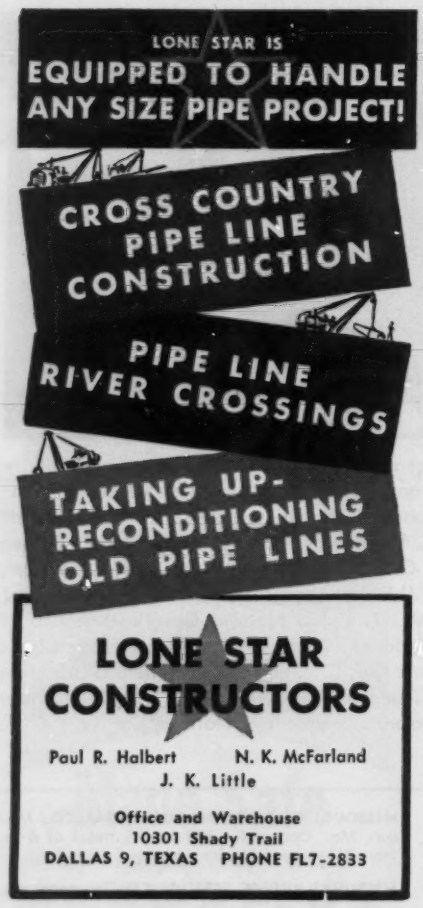

Docket G-2057 for 109.3 miles of 8- and 10-in. mainline and 27.1 miles of lateral lines. System to connect with Panhandle Eastern Pipeline Co. line at Franklin, Mo. and extend northwest.

MORGANFIELD NATURAL GAS CO., Morganfield, Ky. Docket G-1935 for a 31-mile, 4- and 6-in. line lateral to proposed Texas Gas Transmission Corp. line, to serve six Kentucky communities.

NATURAL GAS CO. OF W. VA., Pittsburgh. Docket G-2059 for 7.46 miles of line and retirement of same amount in Columbiana county, Ohio.

NEW YORK STATE ELECTRIC & GAS CORP., Ithaca. Docket G-1999 for total of 49 miles of pipeline; 25 miles 10-in. from DeRuyther to Norwich, N. Y., 24 miles 8-in. from Norwich to Oneonta, N. Y.

NEW YORK STATE NATURAL GAS CORP., Pittsburgh. Docket G-1980 (in part) for a 75-mile, 20-in. line from southern end of Driftwood field line to main dual line in Armstrong county, Po. To be constructed in 1953.

NORTHERN NATURAL GAS CO., Omaha. Docket G-1918 for 400 miles of 24-in. pipe from the United States-Canadian border to a point near Minneapolis and two compressor stations with 5280 hp each.

NORTHERN NATURAL GAS CO., Omaha. Docket G-2009 for a 1.4-mile, 8⅝-in. branch line from its Omaha branch line to a proposed regulating station near La Platte in Sarpy county, Neb.

NORTHERN NATURAL GAS CO., Omaha. Docket G-2063 for 458 miles of mainline additions to connect with Permian Basin Pipe Line Co. system, and 73,200 hp in new and existing stations in Texas, Oklahoma, Kansas, Nebraska, Iowa, Minnesota and South Dakota. Also 475 miles of branch lines and additions to serve customers in Iowa, Minnesota, Nebraska and South Dakota.

NORTHERN NATURAL GAS CO., Omaha. Docket G-2125 for 51 miles of line—including 36 miles of 30-in. mainline loop—in Texas, Oklahoma and Kansas.

NORTHWEST NATURAL GAS CO., New York. Docket G-996 for 992 miles of 18-, 20-, 22-, and 24-in. line in Washington, Idaho, Oregon and British Columbia, together with laterals and four compressor stations aggregating 30,800 hp.

PACIFIC GAS & ELECTRIC CO., San Francisco. Docket G-2102 to build about 259.7 miles of 34-in. mainline loops and 15,000 hp in compressor capacity on line from Topock, Ariz. to a point near Milpitas, Calif.; and 8 miles of line between Milpitas and Irvington, Calif.

PACIFIC NORTHWEST PIPELINE CORP., Houston. Docket G-1429 for 1466 miles mainline; 380 miles of spur and lateral lines; and 16 compressor stations totaling 104,420 hp, to extend from Ignacio, Colo., in the San Juan basin, to Bellingham, Wash. (Seattle area).

PERMIAN BASIN PIPELINE CO., Omaha. Docket G-1928 for 234 miles of line and 54,880 hp in compressor stations to carry gas from Upton, Midland, and Pecos counties, Texas and Lea county, N. M. to connection with 24-in. El Paso Natural line to Dumas, Texas.

SOUTHERN CALIFORNIA GAS CO. and **SOUTHERN COUNTIES GAS CO.,** Los Angeles. Docket G-2104 to build about 73 miles of 30-in. mainline loops and 5280 hp in additional compressor capacity at Blythe on existing line extending from Blythe to Santa Fe Springs, Calif.

TENNESSEE GAS TRANSMISSION CO., Houston. Docket G-1969 for certificate to perform natural gas transmission service for Niagara Gas Transmission Ltd., Toronto, and Iroquois Gas Corp., Buffalo. To construct 574-mile, 30-in. line from Kinder, La. to join existing system; 130 miles of loop line; a 45-mile spur from near Buffalo to international border; submerged crossing of the Niagara river; 17,520 hp additional at existing compressor stations; 3 new stations; and 158 miles of lateral lines.

TRANS-CANADA PIPE LINES LTD., for 2200-miles 30-in. line from Alberta to Toronto; 24-in. line from Toronto to Montreal with 14-in. line to Ottawa; 747-mile gathering system and 13 compressor stations totaling 94,160 hp.

TRANS-NORTHWEST GAS INC., Spokane. Docket G-2111 for construction of a 475-mile system to serve markets in eastern Washington and northern Idaho, starting at international border near Osoyoos, B. C., south to Hanford, Wash., east to Spokane and Wallace, Idaho, north again from Spokane area to Trail, B. C.

UTAH NATURAL GAS CO., Salt Lake City. To build a 96-mile line, beginning with 18-in. pipe from fields in Carbon, Emery and Sanpete counties running northwest to a point near Provo and continuing with 16-in. pipe to a point near Salt Lake City; laterals, field and gathering lines, dehydration plants and appurtenant facilities.

WESTCOAST TRANSMISSION CO. INC., Wilmington, Del., 396 miles, including 277 miles from Sumas, Wash. to Portland, Ore. with short branches to a number of cities in the two states, and 72 miles of laterals and 13 measuring stations. To connect with 923-mile, 24-in. line to be built by parent company, Westcoast Transmission Co. Ltd., from Tangent gas field of Alberta. Location survey under way.

UNDER WAY

ALGONQUIN GAS TRANSMISSION CO., Boston. Facilities including several laterals remain to be completed. Work held up pending further FPC hearings.

ARKANSAS-LOUISIANA GAS CO., Shreveport. Docket G-1979 for 6 miles of 12¾-in. line in Hot Spring county and a 7500-hp compressor station on the company's "Line S" between Waskom, Texas and Perla, Ark. Delta Engineering Corp. at work.

CITIES SERVICE GAS CO., Oklahoma City. Docket G-2038 for installation of 11,400-hp compressor capacity—three 1600-hp units to be added

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to its Greenburg station, Kiowa county; six 1100-hp units in a new station in Harvey county, Kan. Expected to be complete Sept. 30, 1953.

EL PASO NATURAL GAS CO. Dockets G-1630, G-1631 for about 170 miles of 30-in. mainline loop on existing transmission system, and about 153,000 hp in mainline and booster compressor stations.

HOUSTON PIPE LINE CO. has Houston Contracting Co. at work on 40 miles of 16-in. line from Edna, Texas to the Tom O'Connor gas field.

MICHIGAN GAS STORAGE CO., Jackson, has Mahoney Contracting Co. at work on 30 miles of 26-in. line from Laingsburg to Ithaca, Mich. Expect completion by July.

NEW YORK STATE NATURAL GAS CORP., Pittsburgh. To Williams-Austin Co. for 10 miles of 20-in. line in Driftwood, Pa. area. To Pipe Line Construction & Drilling Co. for 19 miles of 20-in. in northern Pennsylvania. Jobs expected to start May 1.

NIAGARA MOHAWK POWER CO., Syracuse, N. Y. To Williams-Austin Co. for 52 miles of 10-in. line from Fulton to Watertown, N. Y. Expect completion Aug. 1, 1953.

NORTHERN NATURAL GAS CO., Omaha. Docket G-1618 for 213 miles of 26-in. loop lines in Texas, Oklahoma, Iowa, Kansas, Nebraska and Minnesota, and 100,160-hp additional compressor capacity. R. H. Fulton at work on 23 miles of 26-in. loop north of Beatrice, Neb. 80% complete. Expect final completion in October.

OHIO FUEL GAS CO., Columbus. Dockets G-2013 and G-1985 for five gas pools to be converted to storage; one in Ashland and Richland counties to be added to Weaver storage area; formation of the new Holmes storage area with four pools in Holmes, Wayne and Ashland counties; 34.5 miles of 20-in. line to bring gas in; and a 6000-hp compressor station. Also 97 miles of line to connect areas with existing transmission facilities. Ohio Pipeline Construction Co. at work on 9-mile portion of 20-in. line from Homer to Mt. Vernon; has contract for 7 miles of 16-in. and 10 miles of 3- through 12-in. gathering lines.

OKLAHOMA NATURAL GAS CO., Tulsa. To build 50-mile, 18-in. line from Sapulpa to Pryor, Okla. to serve chemical plant to be constructed by Deere & Co. and Grand River Dam Authority furnaces. Engineering Construction Co., Tulsa, at work. Expect completion by June 15.

PACIFIC GAS & ELECTRIC CO., San Francisco. Docket G-1651 for 86.25 miles, 34-in. loop and 19,540 hp addition on existing Topock-Milpitas line. Engineers Limited Pipeline Co. at work on loop construction. Bechtel Corp. at work at Topock, Hinkley and Kettelman compressor stations. Expect completion of project in summer 1953.

PACIFIC GAS & ELECTRIC CO., San Francisco. Docket G-1892 for 20 miles of 16-in. line from Burrell to a point near Easton, contract let to Alex Robertson Co. with completion scheduled for May 1; 15 miles of 20-in. pipe extending from Helm and joining the system's Topock-Milpitas line in Fresno county; and for 15.5 miles of 12¾-in. in Madera county parallel to the existing Madera-Livingston line, scheduled for construction in 1953-54.

SOUTHERN CALIFORNIA GAS CO. and **SOUTHERN COUNTIES GAS CO.,** Los Angeles. Docket G-1718 for 13,520-hp additions to compressor facilities on existing line from California-Arizona boundary to Los Angeles. To be completed July 15.

SOUTHERN NATURAL GAS CO., Birmingham. Docket G-1907. Total project approved including 792 miles of line and 14,200-hp compressor capacity—about 522 miles of looping on existing system with addition of 9800 hp to existing stations; about 270 miles in new lines and a new 4400-hp compressor station. Work underway, about 135 miles completed. Miscellaneous sized lines for gathering system, 384 miles to be laid south of Gwinville, Miss.; 5400-hp compressor at Gwinville; and 3300-hp compressor station at Estopinal, La. Brown & Root Inc., H. C. Price Co. and Houston Contracting Co. at work with completion expected Oct. 1, 1953.

TENNESSEE GAS TRANSMISSION CO., Houston. To build 369 miles of line in 1953, enlarge two compressor stations and complete one new station. Of the total pipe, 173 miles will be 30-in. loop; 74 miles, 26-in. loop; and 132 miles of 24-in. line from Mercer, Pa. to Hebron storage field in Potter county, Pa. Addition of 2640 hp will be made at Carrollton, Ohio station; 2200 hp at Mercer, Pa., and a new 6600-hp station will be built at Kinder, La. H. C. Price Co. at work on 74-mile section of Mercer-to-Hebron line. Approximately 80 miles of loop has been completed.

TEXAS EASTERN TRANSMISSION CORP., Shreveport. Docket G-1947 for 315 miles of 24-in. line from a connection with Wilcox Trend line at Provident City, Texas to connection with existing system near Castor, La. Contractors at work: Associated Pipeline Contractors, 75 miles from Lavaca county to Waller county, Texas; Anderson Bros. Corp., 82 miles from Waller county to Polk county, Texas; Williams Brothers Co., 71.4 miles from Polk county to Shelby county, Texas; Pentzien Inc., four river crossings. Scheduled completion date is May 20,

TEXAS GAS TRANSMISSION CORP., Owensboro. Docket G-1847 for 408 miles of 26-in. loop line in six sections. H. C. Price Co. has 44 miles remaining to be completed this spring.

UNITED NATURAL GAS CO., Oil City, Pa. Docket G-1854 for 15.1 miles, 12-in. line and replacement of 6.5 miles, 8-in. line in Venango county, Pa. delayed by pipe deliveries. Expected to be completed by June 1, 1953.

WESTERN SLOPE GAS CO., Denver. About 60 miles of line to complete system from Douglas Creek and Germesa fields to Grand Junction area. Expect completion by fall of 1953.

WILCOX TREND GATHERING SYSTEM INC., Dallas. Docket G-1959 for one 2200-hp compressor station; 157 miles of line from McMullen

Section of an Abrams Aerial Mosaic: Scale 1"=1000'.

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county to connection with Texas Eastern near Provident City, Texas; and about 90 miles of laterals. H. B. Zachry Co. is trunkline contractor; Altgelt Construction Co. at work on gathering system; Brown & Root Inc. to build compressor station. Scheduled completion date is May 20.

PENDING CONSTRUCTION

EAST TENNESEE NATURAL GAS CO., Knoxville. Docket G-1336 for a 100-mile, 16-in. line from near Knoxville to Kingsport, Tenn. with about 58 miles of various sized lateral lines.

IOWA-ILLINOIS GAS & ELECTRIC CO., Davenport. Docket G-2012 for 22 miles of line to connect with Natural Gas Pipeline Co. of America's system in Mahaska county and extend to a point in Ottumwa county, Iowa.

KANSAS NEBRASKA NATURAL GAS CO., Hastings. Docket G-1857. To build 167 miles of line northwest and northeast of Neligh, Neb.; about 51 miles of transmission line in Kansas and Nebraska; and about 111 miles of gathering lines in Kansas, Nebraska and Oklahoma. Work expected to start in June.

MICHIGAN GAS STORAGE CO., Jackson. A 30-mile, 26-in. line from Laingsburg Junction to Ithaca, Mich. to increase service to Flint and Pontiac areas. Construction to start May 15.

NEVADA NATURAL GAS PIPE LINE CO., Las Vegas. Docket G-1888 for 120 miles of 12¾-in. line from Topock, Ariz. to Las Vegas and Henderson areas. Construction scheduled to start about July 1, 1953. H. G. Laub, pres., 7th & B St., Victorville, Calif.

SOUTHEAST ALABAMA GAS DIST., Birmingham. A "U" shaped system of about 330 miles to serve 24 communities in southeastern Alabama from connections with Southern Natural.

SOUTH CAROLINA NATURAL GAS CO., Columbia, S. C. Docket G-1961 for a 160-mile pipeline in Aiken, Lexington, Richland, Orangeburg, Dorchester, Charleston and Berkeley counties, S. C.

SOUTH GEORGIA NATURAL GAS CO., Birmingham. Docket G-1915 for a 335-mile line to serve communities in southwest Georgia and northern Florida. Main trunk would connect with system of Southern Natural Gas Co. in Lee county, Ala. and extend to Albany, Ga., with a branch to Tallahassee, Fla.

APPROVED

CHICAGO DISTRICT PIPELINE CO., Joliet, Ill. Docket G-2090 for 3.4 miles of 36-in., 31.2 miles of 30-in. and a .3 mile river crossing of 24-in. pipe in the Chicago area.

HOME GAS CO., Pittsburgh. Docket G-2059 for 46.7-mile pipeline in Tioga and Broome counties, N. Y. and retirement of 180 hp in compressor units at a station in Broome county. About 19 miles approved.

LONE STAR GAS CO., Dallas. Docket G-2005 for a 2640-hp compressor station and 5 miles of 12-in. line to New York City field reservoir, Clay county, Texas. A 73-mile gathering and transmission system in Jack and Wise counties with a 3320-hp compressor station—the Jacksboro.

TEXAS ILLINOIS NATURAL GAS PIPELINE CO., Chicago. Docket G-1914 for six new compressor stations totaling 70,000 hp on its Texas to Illinois transmission line and installation of additional units totaling 10,000 hp at five existing stations. Also for construction of a suspension bridge across the Mississippi river and lateral lines to connect additional gas reserves to system. Contracts have been let for compressor work.

UNITED FUEL GAS CO., Charleston. Docket G-2061 for 32.5 miles of 24-in. line from new 3960-hp compressor station at existing storage pool in Wood county to Lanham station in Putnam county, W. Va. Also acquisition of leaseholds and authority to drill wells, install well and field lines for new storage pool.

New Products

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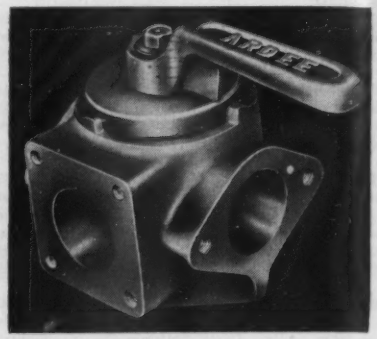

13 Recirculating Valve

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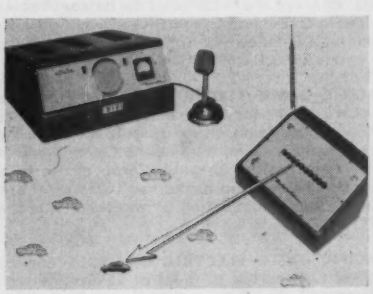

14 Selective Signal System

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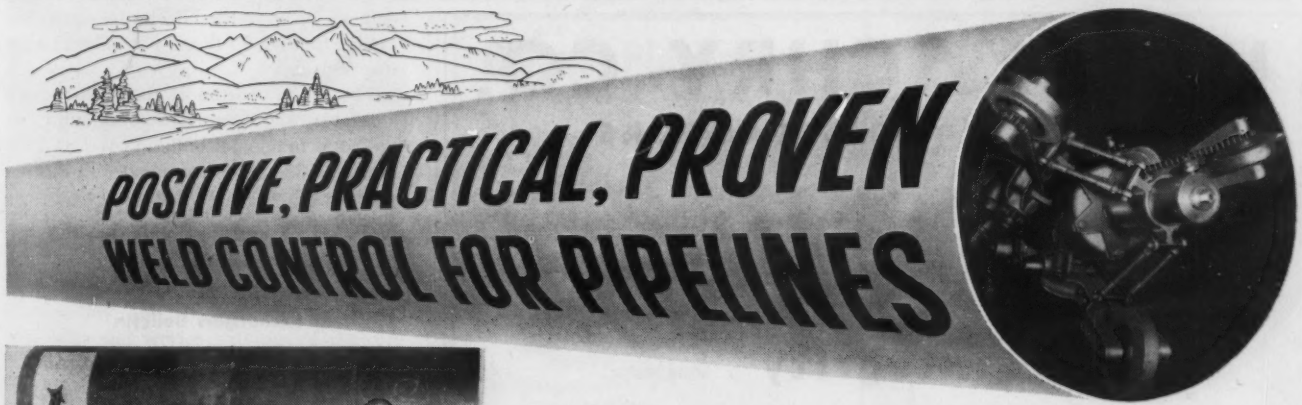

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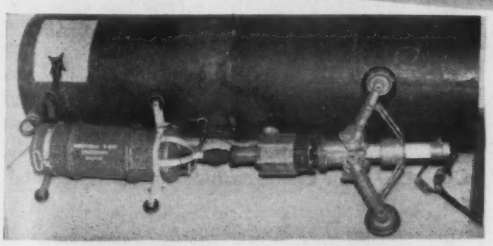

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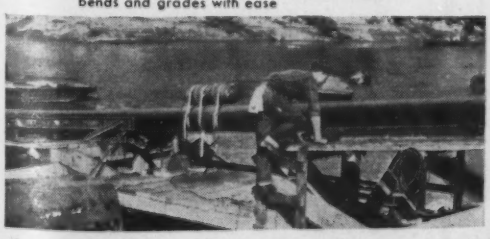

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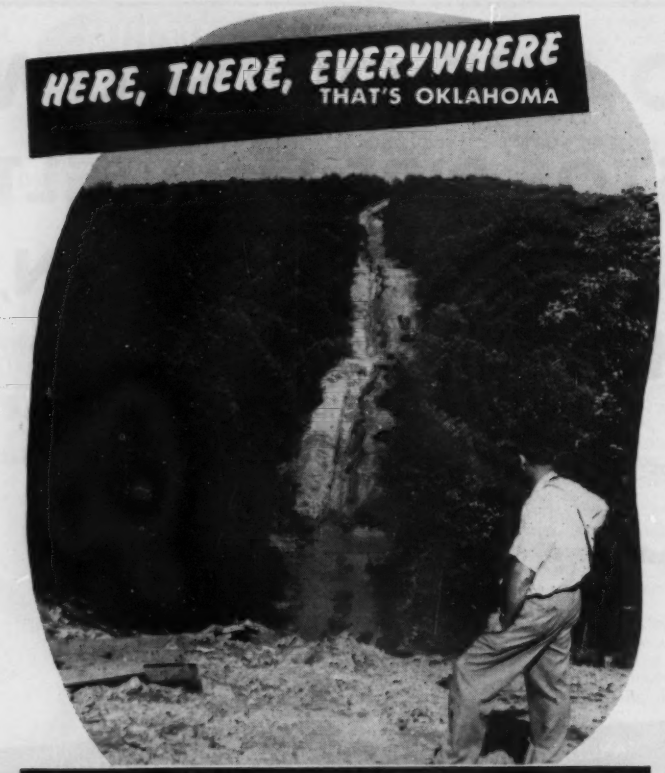
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Trade Literature

16 Asbestos Felt Catalogs

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(b) Characteristics of the reinforced "Vitrabestos," a new Nicolet product, are described in another bulletin covering 15-lb regular, 15-lb perforated, and 8-lb asbestos pipeline felt.

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17 Heat Exchangers Bulletin

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18 Solenoid Valves Bulletin

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Atkomatic Valve Co.

Pipeline People

WILLIAM W. MAYFIELD, formerly superintendent of production for Hope Natural Gas Co., has been made manager of Consolidated system gas supplies with headquarters in Hope's general office building in Clarksburg, W. Va. Other management changes include W. F. CRUTCHLEY, head gas dispatcher for Hope, named Consolidated system gas dispatcher; A. R. MCCAMEY, southern division superintendent, appointed superintendent of production; B. T. CRUSAN, formerly superintendent of Madison district, named southern division superintendent with offices in Charleston; W. B. BERRY, district superintendent of Buffalo district, succeeding Mr. Crusan in the Madison district.

CARL E. HOUGHTON has been appointed superintendent of the Peoples Natural Gas Co. communications department at its Gateway Center offices in Pittsburgh. He succeeds C. D. CAMPBELL, who retired April 1. Mr. Houghton will supervise operations of the company's communications system which extends over five states and serves five subsidiary companies.

C. E. Houghton
Peoples Natural

W. M. McGinnis
B S & B

The appointment of W. M. MCGINNIS as Houston district sales manager has been announced by Black, Sivalls & Bryson Inc., Kansas City, Mo. Mr. McGinnis will supervise sales and service activities of the controls and safety head division in the Houston district.

Among transfers and promotions announced recently by Panhandle Eastern Pipe Line Co., Kansas City, Mo., are the appointment of R. L. MATHESON to the post of assistant personnel director; EVERETT MYERS, formerly in the personnel department, named safety engineer for the production and gathering department; JAMES S. PARKINSON, senior dispatcher at Liberal, appointed safety engineer.

Seven promotions to key plant operating positions in its Mount Vernon and Grove City plants were announced recently by Cooper-Bessemer Corp. TOM MCMICHAN, works manager, and his assistant, FRANK STEVENSON, of the Grove City plant, have been appointed special assistants to the president and will headquarter in Mount Vernon.

•M•E•M•O

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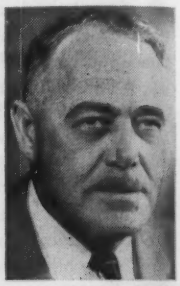
WILLARD LULI, former production manager, and HUGH STEVENSON, superintendent, succeed to the works manager and assistant works manager positions; KEN MARTIN becomes production manager; GUY GAHAGAN, general superintendent, and CLARENCE EVANS, shop superintendent, day shift, all at Grove City.

The board of directors of Clark Bros. Co., Olean, N. Y., has announced a number of changes in its board and corporate officers membership. C. PAUL CLARK, formerly

C. Paul Clark



J. N. MacKendrick

president, has been named chairman; succeeding Mr. Clark is JOHN N. MACKENDRICK, who has been vice president in charge of engineering since 1946; former general sales manager, F. W. LAVERTY was appointed executive vice president; and GEORGE W. PROBST fills the position vacated by DAVID K. HUTCHCRAFT as vice president in charge of sales. Mr. Hutchcraft and FREDERIC H. LIGHT, former vice president, secretary and

G. W. Probst

F. W. Laverty

treasurer, have relinquished their responsibilities in line with the company's retirement policies. They will remain with Clark in a consulting and advisory capacity. Other changes include the appointment of EDWARD G. BEARDSLEY, former chief engineer, as vice president, engineering; RICHARD F. MOSER, works manager, as vice president, manufacturing; and C. C. HILL, former controller, as secretary and treasurer.

Election of EDWIN A. PASHA as vice president of Merritt-Chapman & Scott Corp., New York, was announced recently. He will be in charge of the company's industrial and building construction division.

New chief geologist for Texas Eastern Production Corp., Houston, is BEN F. CURTIS. The appointment was effective April 1.

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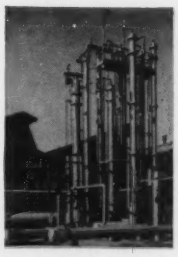

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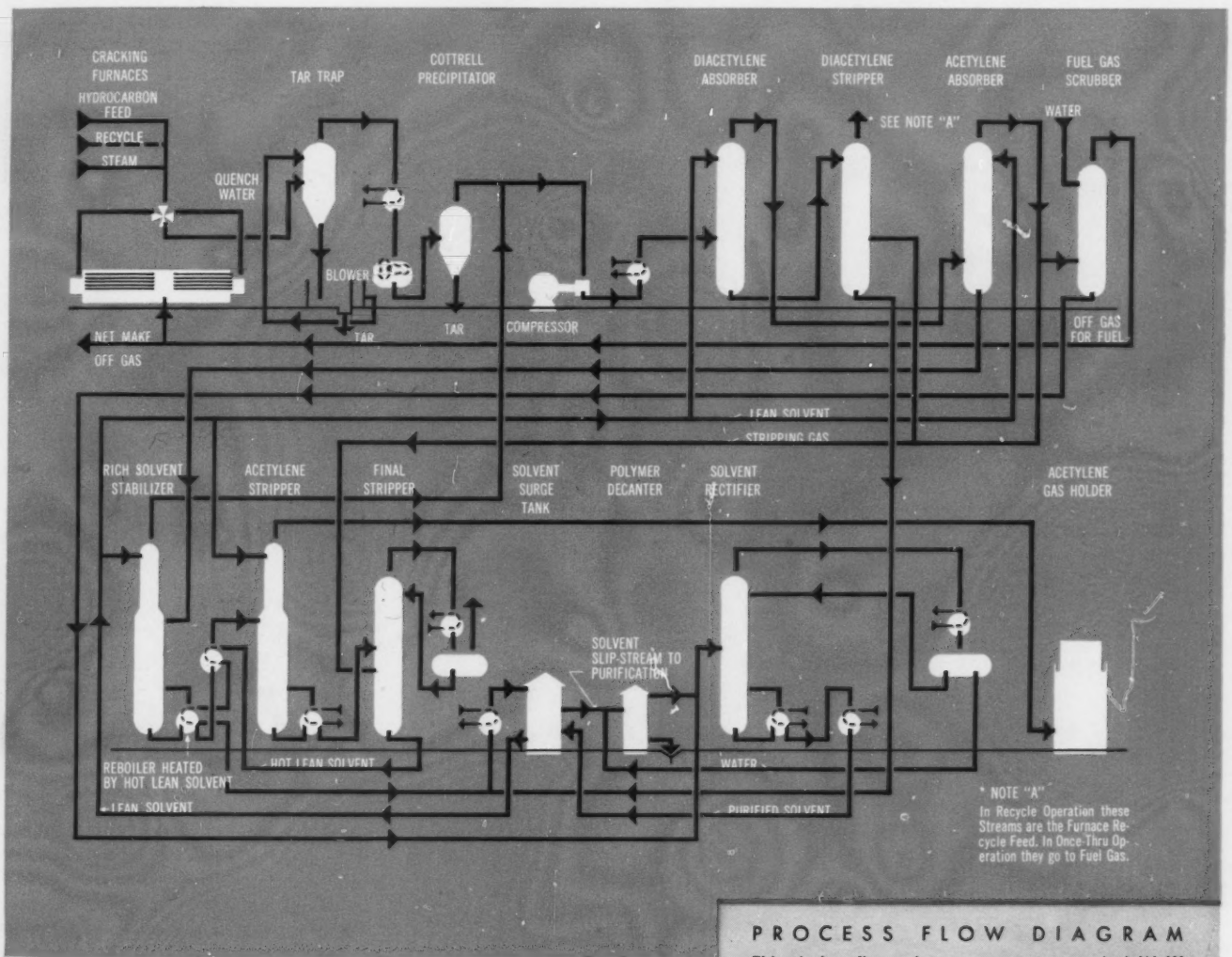

PROCESS FLOW DIAGRAM

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